

FHB - Buckman St. Branch - 2025 Renovations

PROJECT MANUAL

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PROJECT MANUAL

04/30/2025

OWNER

First Harrison Bank

220 Federal Drive NW
Corydon, IN 47112

PROJECT NUMBER

Architect's Project No. 24-220.01



Heather D. Graninger, AIA
State Registration Number 8728

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FHB - Buckman St. Branch - 2025 Renovations
First Harrison Bank

NOTICE TO BIDDERS (Non-Public Works)
00 11 14 - 1
04/30/2025

SECTION 00 11 14 - NOTICE TO BIDDERS

Notice is hereby given that **electronic proposals** will be received:

BY: First Harrison Bank
220 Federal Drive NW
Corydon, IN 47112

FOR: 2025 Renovations
First Harrison Bank – Buckman St. Branch
Shepherdsville, KY 40165

UNTIL: 4PM (EDT)

DATE: Thursday, May 22, 2025

VIA: **Email to heather.graninger@towerpinkster.com**

The Owner will open all bids privately.

Proposals received after the hour and date set for receiving of proposals, will be returned unopened.

All work will be awarded under a single General Contract.

Proposals shall be executed on the Proposal Form included in the bid documents. The signed and sealed hard copy bid documents are on file with the Owner and Architect and may be examined by Bidders at the following location:

TowerPinkster
320 Pearl Street
New Albany, IN 47150
812-282-9554 p

Bidding is BY INVITATION ONLY.

PRE-BID CONFERENCE

DATE: Monday, May 12, 2025
TIME: 2PM (EDT)
LOCATION: 130 Buckman St., Shepherdsville, KY 40165

All bidders will have free access to a complete electronic set of Drawings and Specifications.

All bid documents may be downloaded free of charge in electronic PDF format for viewing, printing and distribution to bidders, sub-bidders, suppliers, and reprographics services at the discretion and responsibility of the General Contractors. Bidders shall complete the Plan Holder List form via www.towerpinkster.com/bid-information.

Upon completion of the form, bidders will be re-directed to the Project Page where all bid information may be downloaded. Bidders should bookmark this link and www.towerpinkster.com/bid-information for future access.

A list of updated Plan Holders and Addenda will periodically be posted and made available for download.

The Architect retains all copyright to the bid documents, as instruments of their professional service.

**PROJECT NO. 24-220.01
FHB - Buckman St. Branch - 2025 Renovations
First Harrison Bank**

**NOTICE TO BIDDERS (Non-Public Works)
00 11 14 - 2
04/30/2025**

Bidders, or any other persons, may not use the PDF files for any other purpose than preparing a bid for this project. Bidders may not distribute bid documents or files to Plan Rooms (either electronic or hard copy format) without the express written permission of the Architect.

For convenience of the bidders, complete electronic files will also be sent to the following reprographic services.

Bidders are responsible for costs of any desired printing of drawings and/or specifications directly from these reprographics services at cost of printing plus any shipping and handling charges.

Zen Reprographics
648 South 8th Street
Louisville, KY 40203
502-587.1951p

www.zenreproplanroom.com

All questions and requests for substitutions shall be directed to:

Heather Graninger
TowerPinkster
heather.graninger@towerpinkster.com

The Owner reserves the right to accept or reject any bid and to waive any irregularities in bidding. The Base Bid may be held for a period not to exceed Forty-Five (45) days before awarding Contracts. All additive Alternate Bids may be held for a period not to exceed Thirty (30) days after signing of Contract.

The successful Bidder shall furnish a Performance Bond and Labor and Materials Payment Bond in an amount equal to one hundred percent (100%) of the Contract Sum with an approved surety company and said bond shall remain in full force and effect for a period of one (1) year after date of final acceptance of the work. The cost of all bonds shall be included in the bid price.

FIRST HARRISON BANK
APRIL 30, 2025

END OF SECTION 00 11 14

AIA® Document A701™ – 2018

Instructions to Bidders

for the following Project:

(Name, location, and detailed description)

First Harrison Bank - Buckman St. Branch 2025
Renovations

THE OWNER:

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

First Harrison Bank
220 Federal Drive NW
Corydon, IN 47112

THE ARCHITECT:

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

Tower Pinkster Titus Associates, Inc
320 Pearl Street, Suite 100
New Albany, IN 47150
Telephone Number: 812.282.9554

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ADDITIONS AND DELETIONS:

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

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

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™–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

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.)

§ 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.)

§ 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.)

§ 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.)

§ 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 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.)

§ 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.)

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

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.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

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents listed below:

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

SECTION 00 22 14 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS (Non-Public Works)

The following supplements modify the Instructions to Bidders, AIA Document A701 - 2018, entitled "Instructions to Bidders". Where a portion of the Instruction to Bidders is modified or deleted by these Supplementary Instructions, the unaltered portions of the Instructions to Bidders shall remain in effect.

ARTICLE 9 - SUPPLEMENTARY INSTRUCTIONS

- 9.1 Article 3 - BIDDING DOCUMENTS, delete the current Paragraph and replace with the following:
- 3.1.1 All bid documents may be downloaded free of charge in PDF format for viewing, printing and distribution to bidders, sub-bidders and suppliers at the discretion and responsibility of the general contractors. All information is posted on a website identified in the Notice to Bidders or available by contacting the Architect. The Architect retains all copyright to all Bid Documents. Bidders may not use the Bid Documents for any purpose except preparing a bid for this project. Bidders may not distribute Bid Documents to Plan Room services, either electronic or hard copy, without the express written permission of the Architect. Printing of bid documents, including all costs associated therewith, is to be borne by the bidders.
- 9.2 Article 3 - BIDDING DOCUMENTS, delete the current Paragraph and replace with the following:
- 3.1.2 Bid documents are available to sub-bidders in accordance with Paragraph 3.1.1.
- 9.3 Article 3 - BIDDING DOCUMENTS, add the following Paragraph:
- 3.1.3 **In the event of any discrepancy between electronic versions and any hard copy, printed versions of the files, the hard copy version on file at the Architect's office will govern.**
- 9.4 Article 3 - BIDDING DOCUMENTS, add the following Paragraph:
- 3.3.5 **When specifications include a list of acceptable manufacturers, it is done for the express purpose of establishing a basis of durability, efficiency, configuration, maintain Owner's maintenance stock, and not for the purpose of limiting competition. These said names establish the products on which the bidder's proposal shall be based for that particular specification item. Proposed substitutions must be submitted in accordance with Specification Section 01630-Product Options and Substitutions.**
- 9.5 Article 3 - BIDDING DOCUMENTS, delete the current Paragraph and replace with the following:
- 3.4.1 **Addenda will be added to the bid documents and made available to all bidders via the website.**
- 9.6 Article 3 - BIDDING DOCUMENTS, delete Paragraph 3.4.3.
- 9.7 Article 4 - BIDDING PROCEDURES, delete Paragraph 4.2 in its entirety, including 4.2.1, 4.2.2 and 4.2.3.
- 9.8 Article 5 – CONSIDERATION OF BIDS, delete the current Paragraph and replace with the following:
- 5.1 **Bids received may be privately opened or publicly read aloud at the sole discretion of the Owner.**
- 9.9 Article 5 – CONSIDERATION OF BIDS, delete the current Paragraph and replace with the following:
- 5.3.1 The Owner shall have the right to accept or reject any and/or all Bids, determined upon any basis. **The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept or reject a Bid which, in the Owner's judgment, is in the Owner's best interest. All are at the sole discretion of the Owner.**

9.10 Article 7 – PERFORMANCE BOND AND PAYMENT BOND.

Under Section 7.1.1, delete the words “If stipulated in the Bidding Documents, the” and substitute the word “The”.

Under Section 7.1.1, add the following sentence: “The costs for all Bonds must be included in the bid price.”

Delete Section 7.1.2 in its entirety.

9.11 Electronic submissions of bids are acceptable. Email bids to kyle.wilson@towerpinkster.com

9.12 **A Wage Scale of minimum wage rates is not required nor has one been established for this project.**

END OF SECTION 00 22 14

PROJECT NO. 24-220.01
FHB - Buckman St. Branch - 2025 Renovations
First Harrison Bank

CONTRACTOR'S BID FORM (Non-PublicWorks)
00 42 03 - 1
04/30/2025

CONTRACTOR'S BID FORM FOR NON-PUBLIC WORKS:

CONTRACTORS BID FOR: *Buckman St. Branch Renovations
Shepherdsville, KY*

Owner: *FIRST HARRISON BANK*
Date: _____
Bidder (Firm): _____
Address: _____
City, State, Zip: _____
Telephone No.: _____
E-Mail Address: _____

Pursuant to notices given, the undersigned proposes to furnish all material and labor necessary to complete general construction according to plans and specifications prepared by TOWERPINKSTER, 320 Pearl St., New Albany, Indiana, for the sum of:

BASE BID

Lump Sum _____ \$ _____

ADDENDA

Acknowledges receipt of:

Addendum No. _____	Dated _____	No. of Pages _____
Addendum No. _____	Dated _____	No. of Pages _____
Addendum No. _____	Dated _____	No. of Pages _____
Addendum No. _____	Dated _____	No. of Pages _____

ALTERNATES

The undersigned also proposes to furnish or to omit all labor and materials necessary to complete work as required by the Alternate Bids, as provided in the specifications as follows:

Alternate No. 1:	<i>Vault Removal</i>	\$ _____
Alternate No. 2:	<i>Roofing Replacement</i>	\$ _____

COMPLETION OF WORK

Undersigned guarantees, if awarded contract, to complete the work within _____ () calendar days.

GENERAL CONTRACTOR CERTIFICATION

I hereby certify that we have obtained a complete set of construction documents, including all Drawings, Specifications and Addenda, and have reviewed the jobsite to sufficiently familiarize ourselves with the existing conditions.

Dated at _____ this _____ day of _____, 20__.

(Name of Organization)

BY

(Title of Person Signing)

PROJECT NO. 24-220.01
FHB - Buckman St. Branch - 2025 Renovations
First Harrison Bank

CONTRACTOR'S BID FORM (Non-PublicWorks)
00 42 03 - 2
04/30/2025

OATH AND AFFIRMATION

I hereby affirm under the penalties for perjury that the facts and information contained in the foregoing bid is true and correct.

Dated at _____ this _____ day of _____, 20____.

(Name of Organization)

BY

(Title of Person Signing)

ACKNOWLEDGEMENT

STATE OF _____

COUNTY OF _____

Before me, a Notary Public, personally appeared the above-named _____ and
(Name of Person Signing)

swore that the statements contained in the foregoing document are true and correct.

Subscribed and sworn to before me this _____ day of _____, 20 ____.

Notary Public

My Commission Expires: _____

County of Residence: _____

END OF SECTION 00 42 03

SECTION 00 43 36 - SUBCONTRACTOR LIST

1.01 PROJECT MANUAL

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

1.02 SCOPE

- A. Successful Bidder for each Contract shall submit his complete Subcontractors List for all trades and divisions of work.
- B. After submission of this List and after approval by the Architect/Engineer and Owner, it shall not be changed without written approval by the Owner and Architect/Engineer.
- C. Refer to Section 00 43 93 – Contractor's Bid Submittal Checklist for requirements as to time of submission.

1.03 FORM

Provide in Contractor's own format to include the following information:

- A. Description of work or trade.
- B. Company Name.
- C. Company Address.
- D. Company Phone and Fax.
- E. Contact Person.
- F. E-mail Address.
- G. MBE/WBE Status.

END OF SECTION 00 43 36

SECTION 00 43 93 – CONTRACTOR'S BID SUBMITTAL CHECKLIST

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Section Includes:
 - 1. Submittals required at time of bid.
 - 2. Submittals required following bid.

1.02 BID SUBMITTALS

- A. The following items are to be submitted by all bidders for all contracts at the time of bidding:
 - 1. Proposal Form
- B. Submit electronically via email per Section 00 11 14 – Notice to Bidders.

A.03 POST-BID SUBMITTALS

- A. The following items are to be submitted by each successful bidder for all contracts within twenty-four (24) hours following the time of bidding:
 - 1. Schedule of Values
 - 2. Subcontractor List
- B. The following items are to be submitted prior to execution of the Owner-Contractor Agreement:
 - 1. Performance Bond
 - 2. Labor & Material Payment Bond
 - 3. Certificate of Insurance
 - 4. Signed Escrow Agreement
- C. Submit all above items to Architect for review and approval.

END OF SECTION 00 43 93

SECTION 00 52 00 - AGREEMENT FORM

1.01 PROJECT MANUAL

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

1.02 SCOPE

- A. The agreement shall be AIA Document A101 - 2017, entitled "Standard Form of Agreement Between Owner and Contractor".
 - 1. Where the basis of payment is a stipulated sum.
 - 2. Copy of this form is bound herewith.
- B. This form, when fully executed, becomes a part of the successful Bidder's Contract Documents.

END OF SECTION 00 52 00

 AIA® Document A101™ – 2017**Standard Form of Agreement Between Owner and Contractor** where the basis of payment is a Stipulated Sum

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

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

First Harrison Bank
220 Federal Drive NW
Corydon, IN 47112

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

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

First Harrison Bank - Buckman St. Branch 2025 Renovations

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

Tower Pinkster Titus Associates, Inc
320 Pearl Street, Suite 100
New Albany, IN 47150

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

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

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

The parties should complete A101™–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

(Check one of the following boxes.)

- ☐ The date of this Agreement.
- ☐ A date set forth in a notice to proceed issued by the Owner.
- ☐ Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

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

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

§ 3.3 Substantial Completion

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

Init.

AIA Document A101™ – 2017. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997, 2007 and 2017 by The American Institute of Architects. **All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® 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.** This document was produced by AIA software at 09:35:24 on 02/27/2018 under Order No. 3051976157 which expires on 06/26/2018, and is not for resale.

User Notes:

(3B9ADA25)

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

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

☐ By the following date:

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

Portion of Work

Substantial Completion Date

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

ARTICLE 4 CONTRACT SUM

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

§ 4.2 Alternates

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

Item

Price

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

Item

Price

Conditions for Acceptance

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

Item

Price

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

Item

Units and Limitations

Price per Unit (\$0.00)

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

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

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

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

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

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

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

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

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

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

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

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

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

§ 5.1.7 Retainage

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

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

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

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

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

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

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

§ 5.2 Final Payment

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

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

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

§ 5.3 Interest

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

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

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

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

(Check the appropriate box.)

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

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

ARTICLE 7 TERMINATION OR SUSPENSION

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

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

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

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

ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.2 The Owner’s representative:

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

§ 8.3 The Contractor’s representative:

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

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

§ 8.5 Insurance and Bonds

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

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

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

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

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

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

- .5 Drawings

Number

Title

Date

- .6 Specifications

Section

Title

Date

Pages

- .7 Addenda, if any:

Number

Date

Pages

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

- .8 Other Exhibits:

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

Init.

/

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

[] The Sustainability Plan:

Title	Date	Pages

[] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:

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

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

OWNER (Signature)

(Printed name and title)

CONTRACTOR (Signature)

(Printed name and title)

Init.

/

SECTION 00 61 13 – CONTRACTOR'S BOND FOR CONSTRUCTION

1.01 PROJECT MANUAL

All requirements of the Project Manual shall apply to this Section.

1.02 SCOPE

- A. The Performance Bond and Labor and Material Payment Bond shall be AIA Document A312 - 2010, comprised of two sections entitled "Performance Bond" and "Payment Bond".
 - 1. Bonds shall be executed by an acceptable Surety Company licensed to do business in the State of Indiana.
 - 2. A copy of this form is bound herewith.
- B. Bonds shall be executed in an amount equal to one hundred percent (100%) of the contract amount in favor of the Owner conditioned on the full and faithful performance of the contract and full payment of all obligations arising there under.
- C. This form when fully executed becomes a part of the successful bidder's Contract Documents.

END OF SECTION 00 61 13



AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

First Harrison Bank
220 Federal Drive NW
Corydon, IN 47112

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

First Harrison Bank - Buckman St. Branch 2025 Renovations

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

Signature: _____

Name and

Title:

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

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:**OWNER'S REPRESENTATIVE:**

(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

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

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

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

Email Address:

Init.

§ 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

Company: _____ *(Corporate Seal)*

Signature: _____

Name and Title: _____

Address: _____

SURETY

Company: _____ *(Corporate Seal)*

Signature: _____

Name and Title: _____

Address: _____



AIA® 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)

First Harrison Bank
220 Federal Drive NW
Corydon, IN 47112

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

First Harrison Bank - Buckman St. Branch 2025 Renovations

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

Signature: _____

Name and

Title: _____

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

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

SURETY

Company: (Corporate Seal)

Signature: _____

Name and

Title: _____

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

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

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

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

Email Address:

Init.

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User Notes:

(3B9ADA1A)

§ 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.

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

CONTRACTOR AS PRINCIPAL

Company: _____ *(Corporate Seal)*

Signature: _____

Name and Title: _____

Address: _____

SURETY

Company: _____ *(Corporate Seal)*

Signature: _____

Name and Title: _____

Address: _____

PROJECT NO. 24-220.01
FHB - Buckman St. Branch - 2025 Renovations
First Harrison Bank

GENERAL CONDITIONS
00 72 00 - 1
04/30/2025

SECTION 00 72 00 - GENERAL CONDITIONS

1.1 PROJECT MANUAL

All requirements of the Project Manual shall apply to this Section.

1.2 SCOPE

- A. The General Conditions shall be AIA Document A201 - 2017, entitled "General Conditions of the Contract for Construction".

1. A copy of which is bound herewith.

END OF SECTION 00 72 00

AIA® Document A201™ – 2017

General Conditions of the Contract for Construction

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

First Harrison Bank - Buckman St. Branch 2025 Renovations

THE OWNER:
(Name, legal status and address)

First Harrison Bank
220 Federal Drive NW
Corydon, IN 47112

THE ARCHITECT:
(Name, legal status and address)

Tower Pinkster Titus Associates, Inc
320 Pearl Street, Suite 100
New Albany, IN 47150

TABLE OF ARTICLES

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- 3 CONTRACTOR**
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- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**
- 7 CHANGES IN THE WORK**
- 8 TIME**
- 9 PAYMENTS AND COMPLETION**
- 10 PROTECTION OF PERSONS AND PROPERTY**
- 11 INSURANCE AND BONDS**
- 12 UNCOVERING AND CORRECTION OF WORK**
- 13 MISCELLANEOUS PROVISIONS**

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

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

Init.

14 TERMINATION OR SUSPENSION OF THE CONTRACT

15 CLAIMS AND DISPUTES



Init.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

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

§ 1.1.2 The Contract

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

§ 1.1.3 The Work

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

§ 1.1.4 The Project

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

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

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

§ 1.2 Correlation and Intent of the Contract Documents

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

consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

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

§ 1.8 Building Information Models Use and Reliance

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

ARTICLE 2 OWNER

§ 2.1 General

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

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

§ 2.2 Evidence of the Owner's Financial Arrangements

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

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

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

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

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements,

assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

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

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

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

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

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

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

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

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

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

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

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

§ 3.3 Supervision and Construction Procedures

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

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

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

§ 3.4 Labor and Materials

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

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

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

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

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

§ 3.6 Taxes

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

§ 3.7 Permits, Fees, Notices and Compliance with Laws

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

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

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

§ 3.7.4 Concealed or Unknown Conditions

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

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

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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

§ 3.9 Superintendent

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

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

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

§ 3.10 Contractor's Construction and Submittal Schedules

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

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

Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

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

§ 3.11 Documents and Samples at the Site

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

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

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

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

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

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

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

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

§ 3.13 Use of Site

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

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

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

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

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

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

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

ARTICLE 4 ARCHITECT

§ 4.1 General

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

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

§ 4.2 Administration of the Contract

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

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

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the

Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

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

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

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

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

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

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

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

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

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations

and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

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

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

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

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

§ 5.3 Subcontractual Relations

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

prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

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

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

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

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

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

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

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

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

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

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

§ 6.2 Mutual Responsibility

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

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work,

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

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

§ 7.2 Change Orders

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

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

§ 7.3 Construction Change Directives

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

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

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

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

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

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

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

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

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

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

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

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

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will

affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

§ 8.2 Progress and Completion

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

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

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

§ 8.3 Delays and Extensions of Time

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

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

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

§ 9.2 Schedule of Values

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

unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

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

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

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

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

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

§ 9.4 Certificates for Payment

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

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

§ 9.5 Decisions to Withhold Certification

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

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

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

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

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

§ 9.6 Progress Payments

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

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

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

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

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

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

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

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

§ 9.7 Failure of Payment

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

§ 9.8 Substantial Completion

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

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

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

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

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

§ 9.9 Partial Occupancy or Use

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

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

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

§ 9.10 Final Completion and Final Payment

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

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

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

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

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

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

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

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

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

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

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

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

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

§ 10.2.8 Injury or Damage to Person or Property

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

§ 10.3 Hazardous Materials and Substances

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

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

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

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

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

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

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

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

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

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

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

§ 11.2 Owner's Insurance

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

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

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

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

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

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

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

§ 11.5 Adjustment and Settlement of Insured Loss

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

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to

the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.2 After Substantial Completion

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

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

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

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

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

§ 13.2 Successors and Assigns

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

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

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

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

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

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

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

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

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

§ 13.5 Interest

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

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

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

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

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

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

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

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

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

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

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance,

the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

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

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

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

§ 14.4 Termination by the Owner for Convenience

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

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

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

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

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

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

§ 15.1.2 Time Limits on Claims

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

§ 15.1.3 Notice of Claims

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

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

§ 15.1.4 Continuing Contract Performance

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

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

§ 15.1.5 Claims for Additional Cost

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

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

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

§ 15.1.7 Waiver of Claims for Consequential Damages

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

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

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

§ 15.2 Initial Decision

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

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

Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

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

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

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

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

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

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

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

§ 15.3 Mediation

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

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

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

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

§ 15.4 Arbitration

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

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

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

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

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

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

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

SECTION 00 73 02 - SUPPLEMENTARY GENERAL CONDITIONS (Non-Public Works)

Unless otherwise provided in these Supplemental Conditions, all work shall be governed by the terms of AIA Document A201 - 2007, entitled "General Conditions of the Contract for Construction". The following Supplemental Conditions, modify, delete from and add to AIA A201. Where an Article Paragraph, Subparagraph or Clause of AIA A201 is modified, deleted from or added to by these Supplemental Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in full force and effect. To the extent that there is any conflict or ambiguity between AIA A201 and these Supplemental Conditions, then these Supplemental Conditions shall control.

ARTICLE 1 - GENERAL PROVISIONS

1.1.1 THE CONTRACT DOCUMENTS

Add the following:

1. Proposal Form.

1.1.5 THE DRAWINGS

Add the following Paragraphs:

- 1.1.5.1 The Drawings are a graphic representation intended to convey the design intent of the Project. They are a 2-dimensional representation of a 3-dimensional Project, and they do not provide a detail for every construction condition of the project. The Drawings are a small scale representation of complex construction assemblies and components, and not every element of the Project can be indicated in these small scale representations. The Drawings are not an instruction manual, nor are they assembly instructions. They are meant for use by experienced, competent construction professionals with the ability to read, interpret, co-ordinate, interpolate and infer information from them. The Drawings do not indicate every component and assembly necessary to construct the Project. It is the Contractor's responsibility to provide all components and assemblies necessary to provide a safe, complete and finished Project, which is reasonably fit for its intended purpose, whether or not such components and assemblies are detailed on the Drawings.
- 1.1.5.2 In general, all drawings are diagrammatic and schematic, and cannot indicate every offset, fitting, and accessory, nor can they indicate the field coordination work required to avoid all conflict with other trades. Contractor shall check drawings, shop drawings, and actual equipment of other trades to verify spaces available and make reasonable modifications, as directed, without extra cost to Owner; maintain headroom and other requirements in all areas; and where such requirements appear inadequate, notify Architect/Engineer before proceeding.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

Add the following sentence to Paragraph 1.2.1:

It is the Contractor's responsibility to provide all work necessary for a complete and finished Project of first class quality. The Contractor will work skillfully, carefully and will perform in all respects in a workmanlike manner.

Add the following Paragraphs 1.2.2.1 and 1.2.3.1:

1.2.2.1 The Drawings are not intended to define the scope of work among various trades, sub-contractors, material suppliers and vendors. The sheet numbering system is for the convenience of the Architect and the Architect's consultants only and is not intended to define a sub-contractor's or material supplier's scope of work. Information is detailed, described and located at various locations throughout the Drawings. No consideration will be given to requests for change orders which relate to a failure of the Contractor, or the Contractor's sub-contractors and suppliers to obtain and review a complete set of Contract Documents during bidding, nor to maintain a complete set of Contract Documents during construction. Where bidding is separated into a number of different prime contracts, this paragraph applies to each of the separate prime contracts.

1.2.3.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities.

1. The Agreement
2. Addenda, with those of later date having precedence over those of earlier date.
3. The Supplementary Conditions.
4. The General Conditions of the Contract for Construction.
5. Drawings and Specifications.

In the case of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation. The Contractor has a duty to inquire about possible ambiguities and inconsistencies which are patent or obvious during the bidding process, and will not receive additional compensation or be excused from resulting difficulties in performance for failure to point out any inconsistencies after that point. In the case of disregard by the Contractor of such inconsistencies and ambiguities, the Architect may require the Contractor to remove and correct work which has been installed at no additional cost to the Owner.

ARTICLE 2 - OWNER

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.2 DELETE Subparagraph 2.2.2 in its entirety.

2.2.3 DELETE Subparagraph 2.2.3 in its entirety and replace with the following:

Neither the Owner nor the Architect shall be liable for inaccuracies or omissions contained in any surveys for the site of the Project, nor shall any inaccuracies or omissions in such items relieve the Contractor of its responsibility to perform the Work in accordance with the Contract Documents.

2.2.5 Replace Subparagraph 2.2.5 with the following:

The Contractor will be provided free of charge all bid documents in PDF format. Printing of all bid documents, including all costs associated therewith, is to be borne by the Contractor for use by and distribution to all their bidders, sub-bidders and suppliers at the discretion and responsibility of the Contractor. All bid documents will be made available as identified in the Notice To Bidders.

ARTICLE 3 - CONTRACTOR

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.4 ADD the following new Subparagraph:

The Contractor shall maintain total control of and shall be fully responsible for the Contractor's employees, agents, representatives, workers, Subcontractors, sub-subcontractors and other such persons or entities, and shall remove from the Site any such persons or entities not in compliance with the Contract Documents as interpreted by the Architect or the Owner. The Contractor shall assure harmonious labor relations at and adjacent to the Site so as to prevent any delays, disruption or interference to the Work. The Contractor shall prevent strikes, sympathy strikes, slowdowns, work interruption, jurisdictional disputes or other labor disputes resulting for any reason whatsoever, from the acts or failure to act, of the employees of the Contractor or any of its Subcontractors material suppliers, or other such persons or entities. The Contractor agrees that it will bind and require all of its Subcontractors, material suppliers and other such persons or entities to agree to all of the provisions of this subparagraph. If the Contractor or any of its Subcontractors, material suppliers or other such persons or entities fail to fulfill any of the covenants set forth in the Subparagraph, the Contractor will be deemed to be in default and substantial violation of the Contract Documents.

1.5.1 WARRANTY

Add the following new Subparagraphs 3.5.2, 3.5.3, 3.5.4, 3.5.5, 3.5.6, 3.5.7, 3.5.8 and 3.5.9.

- 3.5.2 For a period of one (1) year from the date of Substantial Completion, the Contractor warrants as provided in Subparagraph 3.5.1 and further warrants to the Owner, and the Architect that (a) all movable or adjustable work shall remain in working order, including hardware, doors, windows, apparatus, machinery, mechanical and electrical equipment and (b) the Contractor's portion of the Work shall be waterproof and weatherproof in every respect.
- 3.5.3 In addition to all the Contractor warranties and obligations to correct defective Work provided by law or as set forth in any of the Contract Documents, the Contractor agrees, upon notice from the Owner or the Architect, to pay for, and if requested, correct, repair, restore and cure any damage or injury, whenever the same shall occur or appear, resulting from any defects, omissions or failure in workmanship or materials, and indemnify, hold harmless, and defend the Owner against any and all claims, losses, costs, damages and expenses, including attorneys' fees, suffered by the Owner as a result of such damage or injury, whenever such damage or injury shall occur or appear.
- 3.5.4 The commencement and terms of the guarantees and warranties required by the Contract Documents shall not in any manner be affected by any delay in the commencement, progress or completion of the Work, regardless of the cause therefore.
- 3.5.5 The foregoing guarantees and warranties shall not shorten any longer warranty or liability period provided for by law or in the Contract Documents or otherwise received from the Contractor or any Subcontractor, material supplier or manufacturer, nor supersede the terms of any special warranty given by the Contractor, nor shorten any period of the Contractor's legal liability for defective Work, but shall be in addition thereto.
- 3.5.6 Notwithstanding anything to the contrary contained herein with respect to warranties, it is understood and agreed that the foregoing warranties and guarantees shall not affect, limit or impair the Owner's right against the Contractor with regard to latent defects in the Work which do not appear within the applicable warranty period and which could not, by the exercise of reasonable care and due diligence, be ascertained or discovered by the Owner within such warranty period. The Contractor shall be correct and cure any such latent defects which are reported to the Contractor by the Owner in writing within ninety (90) days after such latent defect first appears or could, by the exercise of reasonable care and due diligence, be ascertained or discovered by the Owner.
- 3.5.7 Neither the acceptance of any of the Work by the Owner, in whole or in part, nor any payment, either partial or final, by the Owner to the Contractor, shall constitute a waiver by the Owner of any claims against the Contractor for defects in the Work, whether latent or apparent, and no such payment or acceptance of the Work by the Owner shall release or discharge the Contractor of the Contractor's surety, if any, from any such claims for breach of such warranties.
- 3.5.8 Upon completion of the Work, the Contractor shall furnish the Owner with all written warranties, guarantees, operating manuals, all shop drawings and submittals used in the project relative to equipment installed, and if requested by the Architect, a complete set of reproducible drawings with all field changes noted on them relating to the improvements constructed.

- 3.5.9 If required by the Owner or the Architect, the Contractor shall deliver to the Owner a signed affidavit stating that the Work has been constructed in accordance with the Contract Documents. If such affidavit is required, final payment or a final certificate for payment shall not be tendered until such affidavit has been delivered to the Owner.

- 3.12 **SHOP DRAWINGS, PROJECT DATA AND SAMPLES**
Refer to Section 01 33 00 - Submittal Procedures for further provisions on this subject.

- 3.13 **USE OF SITE**

ADD the following new Subparagraphs 3.13.1 and 3.13.2:

- 3.13.1 If the Owner requires the contractor to relocate materials or equipment which have been stored on the Site or within the Project, the Contractor shall relocate such materials or equipment at no additional cost to the Owner.
- 3.13.2 The Contractor is solely responsible for its Site access. The Contractor shall keep all roads, walks, ramps and other areas on and adjacent to the Site in good working order and condition and free from obstructions which might present a hazard to or interference with traffic or the public. When construction operations necessitate the closing of traffic lanes, the Contractor shall be responsible for arranging such closings in advance with the authorities having jurisdiction, the Owner, and adjacent property Owners. The Contractor shall provide adequate barricades, signs and other devices for traffic guides and public safety. Contractor shall maintain all adjacent streets to that Project in a clean condition and shall clean all dirt and mud from the Project and from such adjacent street on a daily basis.
- 3.14 **CUTTING AND PATCHING**
Refer to Section 01 73 29 - Cutting and Patching for further provisions on this subject.
- 3.15 **CLEANING UP**
Refer to Section 01 74 23 - Cleaning for further provisions on this subject.

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

- 6.2 **MUTUAL RESPONSIBILITY**

ADD the following new Subparagraphs 6.2.6 and 6.2.7:

- 6.2.6 No Contractor, other Contractor, or Subcontractor, shall be entitled or permitted to sue or make a claim against the Owner or the Architect on account of any delay, disruption or acceleration or damage related thereto. If, however, the Owner or the Architect is sued or receives a claim from a Contractor or other Contractor on account of any alleged delay, disruption, interference or acceleration or damage related thereto caused, or alleged to be caused, in whole or in part, by the Contractor, the Contractor shall

defend and indemnify the Owner and the Architect therefore, and reimburse them for their attorney's fees, costs and expenses.

- 6.2.7 Inasmuch as the completion of the Project within the Contract Time is dependent upon the close and active cooperation of all those engaged therein, it shall be expressly understood and agreed that the Contractor shall lay out and install its Work at such time or times and in such manner as not to delay, interfere, or disrupt the Work of others.

ARTICLE 7 - CHANGES IN THE WORK

7.1 GENERAL

Add the following new Subparagraphs 7.1.4 and 7.1.5:

7.1.4 Consultants to Architect or Owner:

1. Consultants to Architect or Owner shall have NO authority to modify Contract requirements in the Scope of Work or Contract Time.
2. Consultants to Architect or Owner shall have no direct communication with Contractor or subcontractors, suppliers and vendors to Contractor without the express consent of the Architect.
3. Any direct communication authorized by the Architect shall be for clarifications of the Work only and shall not act to authorize any changes in the Scope of Work, Contract Sum or Contract Time.

- 7.1.5 The overhead, profit and commission percentages included in a Change Order or Construction Change Directive must not exceed the maximums given at the end of this paragraph, and will be considered to include, but not be limited to, insurance (other than Workman's Compensation Insurance, FICA, Medicare and FUTA), bonds, small tools, incidental job burdens, supervisory expense, project management expense, clerical expense, preparatory expense and general office expense. Workmen's Compensation Insurance, and employment taxes under FICA, Medicare and FUTA are to be itemized separately and no percentage for overhead, profit and commission will be allowed on them. The percentages for overhead, profit and commission will be negotiated and may vary according to the nature, extent and complexity of the work involved, but not to exceed the maximum percentages shown. Not more than three percentages will be allowed regardless of the number of tiers of sub-contractors; that is, the markup on work subcontracted by a subcontractor will be limited to one overhead percentage and one profit percentage in addition to the prime contractor's commission percentage. On proposals covering both increases and decreases in the amount of the contract, the overhead, profit, and where applicable, commission, will be computed on the net change only. On proposals for decreases in the amount of the contract, the overhead and profit shall be added to the decrease in direct cost:

<i>Description</i>	<i>Overhead</i>	<i>Profit</i>	<i>Commission</i>
To Contractor on work performed by other than his/her own forces	0%	0%	10%
To Contractor for that portion of work performed with by his/her own forces	10%	10%	0%
To Sub-contractor for that portion of work performed by his/her own forces	10%	10%	0%

7.3 CONSTRUCTION CHANGE DIRECTIVES

Add the following new Subparagraph to 7.3.7.6:

- 7.3.7.6 Amount for overhead and profit as set forth in this Agreement shall be in accordance with the schedule set forth in Article 7.1.5.

ARTICLE 8 - TIME

8.2 PROGRESS AND COMPLETION

ADD the following Subparagraphs 8.2.4, 8.2.5 and 8.2.6:

- 8.2.4 Whenever it may be useful or necessary for the Owner to do so, the Owner may take possession of the Project or parts thereof at any time that it is determined by the Architect that the Work has been completed to a point where the Owner may occupy or use said Project, or parts thereof, without interference, delay or disruption to the continued execution of the work. The Owner may at such time install furnishings and equipment as it sees fit or may at its discretion hire other Contractors for this purpose. Such use or occupation shall not relieve the Contractor of these warranty obligations as provided in the Contract Documents nor shorten their commencement dates.
- 8.2.5 Except as otherwise provided herein, substantial completion of work shall be within the number of calendar days stated by the Contractor on the Proposal Form and shall become a contract obligation. The time for completion of the work shall be extended for the period of any excusable delay, which term shall include only those delays directly caused by any of the reasons enumerated in the following subparagraph 8.3.2 and 8.3.3.
- 8.2.6 Completion shall be understood to be substantially complete for the Owner's beneficial occupancy, with only minor Punch List" items yet to be completed and items such as balancing of heating system, etc., which cannot be completed due to climatic conditions.

8.3 DELAYS AND EXTENSIONS OF TIME

DELETE Subparagraph 8.3.1 in its entirety and substitute the following:

- 8.3.1 If the Work is delayed, disrupted, interfered with or constructively accelerated (hereinafter and collectively referred to as "Hinderance" or "Hindrances") at any time by any act or neglect of the Owner, the Architect, other Contractors or Subcontractors, or any of their employees, or by changes ordered in the Work, fire, unusual delay in transportation, unavoidable casualties, or other cause beyond the Contractor's control as elsewhere provided in the Contract Documents, then the Contract Time shall be increased by Change Order for such reasonable time as the Architect may determine.

DELETE Subparagraph 8.3.3 in its entirety and substitute the following:

- 8.3.3 Whether or not any Hinderance shall be the basis for an increase in the Contract Time, the Contractor shall have no claim against the Owner or the Architect for an increase in the Contract Sum, nor a claim against the Owner or the Architect for a payment or allowance of any kind for damage, loss or expense resulting from any Hinderance. As between the Contractor and the Owner, except for acts constituting intentional or grossly unreasonable interference by the Owner or the Architect with the Contractor's performance of the Work when such acts continue after the Contractor's written notice to the Owner of such interference or disruption, the Contractor shall assume the risk of all Hindrances arising from any and all causes whatsoever, including without limitation, those due to any act or omission of the Owner or the Architect, except only to the extent that an increase to the Contract Time may be due to the Contractor as expressly provided for in this Subparagraph. The Contractor shall bear all costs, expenses and liabilities in connection with Hindrances and all costs, expenses and liabilities of any nature whatsoever, whether or not provided for in the Contract Documents, shall conclusively be deemed to have been within the contemplation of the parties. The only remedy available to the Contractor shall be an increase in the Contract Time.

ADD the following new Subparagraphs 8.3.4, 8.3.5 and 8.3.6:

- 8.3.4 The Owner's exercise of any of its rights under the Contract Documents, including but not limited to its rights regarding changes in the Work, regardless of extent or number of such changes, performance of separate Work or carrying of the Work by the Owner or the Architect, directing overtime or changes in the sequence of the Work, withholding payment or otherwise exercising its rights hereunder, or exercising any of its remedies of suspension of the Work or requirements of correction or re-execution of any defective Work shall not, under any circumstances, be construed as intentional interference or disruption with the Work.
- 8.3.5 No increase in the Contract Time shall be granted for any Hindrance resulting from unsuitable ground conditions, inadequate forces, the failure of the Contractor to place orders for equipment or materials sufficiently in advance to insure their delivery when needed, or any Hindrance resulting from interruptions to or suspensions of the Work so as to enable others to perform their Work, other than as specifically provided elsewhere in the Contract Documents.
- 8.3.6 If the Contractor causes a Hindrance to the Work so as to cause any damage to the Owner or any damages for which the Owner may become liable, the Contractor shall be liable therefore and the Owner may withhold from any amount yet due the Contractor the amount reasonably required to compensate the Owner for such damages, if the amount of compensation exceeds the amount yet paid to the Contractor, the Contractor shall pay the difference to the Owner immediately upon demand.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES

Add the following new Subparagraph 9.2.2:

- 9.2.2 Contractor shall obtain written concurrence in such schedule of values from the Surety furnishing any Performance Bond and Labor and Materials Payment Bond. Copy of written concurrence by the Surety shall be submitted by the time of written submission.

9.3 APPLICATIONS FOR PAYMENT

ADD the following new Subparagraphs: 9.3.1.3, 9.3.1.4, 9.3.1.5, and 9.3.1.6:

- 9.3.1.3 The Owner will pay ninety-five percent (95%) of the amount due the Contractor on Account of progress payments for the entire period of the Contract.
- 9.3.1.4 A subcontractor shall be paid ninety-five percent (95%) of the earned sum by the Contractor for the entire period of the Contract.
- 9.3.1.5 The Owner, Contractor and the Architect/Engineer shall cooperate to the end that retentions shall be paid promptly when all conditions of the Contract have been met.
- 9.3.1.6 Applications for payment, subsequent to the first application, shall be accompanied by Waivers of Lien from the Contractor and all major subcontractors, suppliers, and vendors.

ADD the following at the end of Subparagraph 9.3.3:

- 9.3.3 This provision shall not be construed as relieving the Contractor from the sole responsibility and expense for the care and protection of materials and Work upon which payments have been made or the restoration of any stolen, destroyed or damaged Work, or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the Contract Documents.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

ADD the following new Subparagraph 9.5.4:

- 9.5.4 If any claim or lien is made or filed with or against the Owner, the Architect, the Project, or the Contract Sum by any persons or entity claiming that the Contractor or and Subcontractor or other person for whom the Contractor is responsible has failed to make payment for labor, services, materials, equipment, taxes or other items or obligations furnished or incurred for or in connection with the Work, or if at any time there shall be any evidence of such non-payment or of any claim or lien which is chargeable to the Contractor, or if the Contractor or any Subcontractor or other person or entity for whom the Contractor is responsible caused damage to the Work or to any other Work on the project, or if the Contractor fails to perform or is otherwise in default under any of the terms or provisions of the Contract Documents, the Owner shall have the right to retain from any payment then due or thereafter to become due an amount which it deems sufficient to (1) satisfy, discharge and/or defend against such claim or lien or any action which may be brought or judgment which may be recovered thereon, (2) make good any such non-payment, damage, failure or default, and (3) compensate the Owner and the Architect for any and all losses, liabilities, damages, cost and expenses, including legal fees and costs, which may be sustained or incurred by either or both of them in connection therewith. The Owner shall have the right to apply and charge against the Contractor so much of the amount retained as may be required for the foregoing purposes. If the amount retained is insufficient therefore, the Contractor shall be liable for the difference and shall pay the difference to the Owner.

9.6 PROGRESS PAYMENTS

DELETE Subparagraph 9.6.6 in its entirety and replace with the following:

9.6.6 No recommendation or certification of a progress payment, any progress payment, final payment, or any partial or entire use or occupancy of the Project by the Owner, shall constitute acceptance of any Work not in accordance with the Contract Documents.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 DELETE the phrase "when such portion is designated by separate agreement with the Contractor" in line 2; DELETE the last two sentences in Subparagraph 9.9.1.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 ADD the following sentence at the end of the Subparagraph:

"Provided, however, that final payment shall not be due and payable until sixty-one (61) days after the Work has been completed and the Contract fully performed".

9.10.4 ADD the following at the end of Subparagraph 9.10.4:

"Final payment constituting the unpaid balance of the Contract Sum shall be paid to the Contractor in full, no less than sixty-one (61 days) following the date of substantial completion. If at any of that time there are any remaining uncompleted 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 items are completed and a Final Certificate of Payment is issued by the Architect".

DELETE Subparagraph 9.10.5 in its entirety and replace with the following:

9.10.5 The Contractor's obligation to perform the Work and complete the Project in accordance with the Contract Documents shall be absolute. Neither approval of any progress or final payment, nor the issuance of a Certificate of Substantial Completion, nor any payment by the Owner to the Contractor under the Contract Documents, nor any use or occupancy of the Project or any part thereof by the Owner, nor any act of acceptance by the Owner shall constitute an acceptance of Work not in accordance with the Contract Documents, nor does it constitute a waiver of any claims that arise from: (1) liens, claims, security interests or encumbrances arising out of the contract or settled; or (2) terms of any warranties in favor of the Owner that are provided pursuant to the Contract Documents or otherwise.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

DELETE Subparagraph 10.1.1 in its entirety and replace with the following:

- 10.1.1 The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work and in connection with the Contractor's performance of any work other than the Work.

10.2 SAFETY OF PERSONS AND PROPERTY

- 10.2.1 REPLACE the words "reasonable" with the phrase "all necessary" in both instances in line 1.

ADD the following to Subparagraph 10.2.1:

- .4 Protect excavation, trenches, buildings and grounds from all water damage. Furnish necessary equipment to provide this protection during the term of the Contract. Construct and maintain necessary temporary drainage to keep excavations free of water.
- .5 Provide protection of the Work against wind, storms, cold and heat. At the end of each day, cover new Work which may be damaged;
- .6 Provide adequately-engineered shoring and bracing required for safety and for the proper execution of the Work and have same removed when the Work is completed; and
- .7 Protect, maintain and restore benchmarks, monuments and other reference points affected by the Work. If benchmarks, monuments or other reference points are displaced or destroyed, points shall be re-established and markers reset under the supervision of a licensed surveyor, who shall furnish certificates of its work.

- 10.2.5 INSERT the word "solely" after the word "loss" in the clause which reads "except damage or loss attributable to acts or omissions of the Owner or Architect...".

ADD the following new Subparagraphs 10.2.9, 10.2.10 and 10.2.11:

- 10.2.9 "The Project is designed to be self-supporting and stable after the Work is fully completed. Except as otherwise provided, it is solely the Contractor's responsibility to determine erection procedures and sequences, and to insure the safety of the Project and its component parts during erection. This includes, but is not limited to, the addition or modification of whatever temporary bracing, guys or tie downs may be necessary. Such material shall be removed after completion of the Work".
- 10.2.10 The Contractor shall conform with the United States Department of Labor and the State Division of Labor Occupational Safety and Health Administration regulations.
- 10.2.11 The Contractor shall have the Hazard Communication Program in effect with all their personnel working on the project. All Material Data sheets should be current as required by law.

ARTICLE 11 - INSURANCE AND BONDS

11.1 CONTRACTOR'S INSURANCE AND BONDS

11.1.1 ADD the following at the end of the subparagraph:

- .1 The form of such bonds shall be acceptable to Owner and in compliance with **Indiana** Statute:
- .2 The Bonds shall remain in effect for a period of not less than one (1) year following the date of Substantial Completion and/or time required to resolve any items of incomplete Work and the payment to any owed amounts, whichever time period extends the longer.
- .3 The amount of the Performance Bond and the Labor and Material Bond shall each be 100% of the Contract Sum; and
- .4 The Contractor shall require the attorney in fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his power of attorney indicating the momentary limit of such power.
- .5 The required insurance shall be written for not less than the limits stated in the Owner's Instructions to the Architect (AIA Document G612, Part B) as included in the Project Manual or as required by law, whichever is greater and with the Owner, Architect, Consultants, and Engineers or their assigned names as "Additional Insureds" "Primary" on the insurance policy. Coverages shall be maintained without interruptions from date of commencement, of the work, until date of final payment and termination of any coverage required to be maintained after final payment.

Add the following new Subparagraph 11.1.5 and 11.1.6:

- 11.1.5 The Contractor shall furnish one copy of Certificate of Insurance and Bonds required of each copy of the agreement, which shall specifically set forth evidence of all coverages required. Furnish Owner copies of any endorsements subsequently issued amending coverage limits.
- 11.1.6 The Contractor shall keep the surety informed of the progress of the Work, changes in the Work, requests for release of retainage, request for final payment and any other information required by the surety.

11.2 OWNER'S INSURANCE

- 11.2.1.1 Any errors and omissions insurance maintained by the Architect or the Architect's Consultants shall not serve to exclude the Architect or Architect's Consultant from the mutual waiver of rights outlined in paragraph 11.3.7. The waiver of rights is given in exchange for property insurance covering the work.

11.2.2 Change the second sentence to include after sub-subcontractors: "...and Architects and Engineers of Record".

ARTICLE 13 – MISCELLANEOUS PROVISIONS

13.2 SUCCESSORS AND ASSIGNS

- 13.2.1 DELETE the last two sentences of this Subparagraph.
ADD the following as the last two sentences of the Subparagraph:

"Contractor shall not assign the Contract or any portion thereof without the written consent of Owner. Owner is entitled to assign the Contract or any portion thereof".

13.2.2 DELETE this Subparagraph in its entirety.

13.5 TESTS AND INSPECTIONS

ADD the following new Subparagraph 13.5.7:

13.5.7 Neither the observations of the Architect, its administration of the Contract Documents, nor inspections tests or approvals by persons other than the Contractor shall relieve the Contractor from its obligation to perform the Work in accordance with the Contract Documents.

ADD the following new Paragraph 13.8:

13.8 There shall be no firearms allowed on the project site or anywhere within the project property. Exceptions would be made for law enforcement officials, security forces required elsewhere by these Specifications, or per other requirements or allowances specifically made by the Owner.

ADD the following new Paragraph 13.9:

13.9 There shall be no smoking or tobacco use allowed within the buildings, on the project site or anywhere within the project property. Violators shall be removed from the project immediately.

Any construction materials in contact with or exposure to such tobacco products shall be removed and replaced with new, at the Contractor's expense.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

DELETE Subparagraph 14.1.1 in its entirety and replace with the following:

14.1.1 If the Work is stopped for a period of sixty (60) days under an order of any court or other public authority having jurisdiction, or as a result of any act of government such as a declaration of a national emergency making material unavailable, through no act or failure to act of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the Contractor, and the Owner has not otherwise suspended, delayed, disrupted or interrupted the Work in accordance with the Subparagraph, then the Contractor may, upon fourteen (14) days' written notice to the Owner, terminate the Contract, and recover from the Owner payment for all Work executed to date. Recovery by the

Contractor of lost anticipated profit and overhead and other consequential and incidental damages is hereby specifically excluded.

14.1.3 DELETE all words following the words "payment for" and ADD the following after "payment for":

"all work executed to date. Recovery by the Contractor of lost anticipated profit and overhead and other consequential and incidental damages is hereby excluded."

ADD the following new Subparagraph 14.1.5:

14.1.5 "The Owner shall not be liable to the Contractor for the Owner's failure to perform its obligations set forth herein if such performance is prevented or interrupted by war (including the consequences thereof), fire, tornado, hurricane, windstorms, labor problems, fuel or transportation shortages, civil unrest, governmental action, or any other natural or economic disaster or cause which is reasonably beyond the control of the Owner ("Force Majeure"). If the estimated duration of the Force Majeure is one year or more, the Contractor shall have the option to terminate this Contract upon thirty (30) days' written notice. In the event that the estimated duration of the Force Majeure is less than one year, the Contract Time shall be increased by the same length of time as the Force Majeure persisted."

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1 DELETE this Subparagraph in its entirety.

14.3.2 DELETE this Subparagraph in its entirety.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

14.4.3 DELETE the words "and cost incurred by reason of such termination" and REPLACE with "reimbursable costs actually incurred."

DELETE the words "reasonable overhead and profit on" in the second line and REPLACE with "and an amount representing six percent (6%) of the amount of the work not executed".

END OF SECTION 00 73 02

SECTION 01 11 00 - SUMMARY OF WORK – SINGLE CONTRACT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Work covered by the Contract Documents.
2. Contractor's use of premises.
3. Coordination of work and trades.
4. Owner occupancy during construction.
5. Construction scheduling and phasing.

B. Project is being bid with construction work under one General Contract for all trades.

C. Project includes, but is not limited to the following work:

1. Demolition of exterior canopies and construction of new canopies to reconfigure main building entrance and bank drive-thru location as indicated on Drawings and specified herein.
2. General demolition throughout building interior (including floor slab) and replacement with new construction as indicated on Drawings and specified herein.
3. General demolition of mechanical, plumbing, and electrical systems and replacement with new systems as indicated on Drawings and specified herein.
4. Improvements of the building envelope as indicated on Drawings and specified herein.
5. Mold is present in the building. Contractor to include mold remediation work in their Contract.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Provide and pay for all materials, labor, services, equipment, licenses, permits, fees, taxes, and other items necessary for the execution, installation and completion of Work indicated in Contract Documents.**
- B. The Work includes coordination with Architect, Owner's Representative, Owner's separate contractors, material suppliers and vendors. Contractor shall conduct construction operations to assure least inconvenience to Owner and public.**

1.3 CONTRACTOR'S USE OF PREMISES

A. Assume full responsibility for protection and safekeeping of products stored on premises.

1. Move any stored products that interfere with operations of Owner or other Contractor.
2. Obtain and pay for use of additional storage or work areas needed for operations.
3. Available space for construction field offices and storage sheds is limited to the project site. Contractor must arrange for off site storage as required.

- B. Contractor shall allow for any other work outside of this contract, whether by Owner's personnel or Contractors under Owner's separate contracts, to proceed without delay or impediment. Contractor shall cooperate with Owner in all construction operations to minimize conflict.
- C. Contractor shall provide temporary heating and ventilation, temporary dust partitions, plastic sheeting, plywood sheeting, and any other means required to protect all elements of existing building from damage or deterioration during construction.

1.4 COORDINATION

- A. Schedule, manage and expedite all work under his Contract, coordinating his work with his sub-contractors, material suppliers, vendors, and trades so that no conflicts of timing or location occur.
 - 1. Work shall progress according to approved progress schedule. Schedule dates for incorporation of work, and identify all critical path events and dates.
 - 2. Coordinate and provide all floor, ceiling, roof, and wall sleeves.
 - 3. Provide all cutting, fitting or patching required.
- B. Keep Architect informed on the progress of the work.
 - 1. Close or cover no work until duly inspected and approved.
 - 2. Uncover un-inspected work and after approval, repair and/or replace all work at no cost to Owner.
 - 3. Notify Architect at least 7 days in advance of utility connections, utility shut-offs, mechanical equipment and oil line cutovers, street or alley closings to allow ample time to receive Owner's written approval of procedure to be followed.
 - 4. Coordinate all operations with the Architect and Owner. Complete in the minimum amount of time.
- C. Protection:
 - 1. Do not close or obstruct streets, entrance drives, sidewalks or other facilities without permission of the Owner and local authorities.
 - 2. Conduct operations with minimum interference.
 - 3. Furnish, erect and maintain barricades, warning lights, signs and guards as may be required.

1.5 OWNER OCCUPANCY

- A. Site is currently vacated by the Owner; contractor will have complete use of site during construction.

1.6 CONSTRUCTION SCHEDULING AND PHASING

- A. Owner intends to award the Contract and issue a Notice to Proceed within 30 days after bid opening.
- B. Contractor shall mobilize on site and begin work immediately thereafter.
- C. **Contractor shall provide calendar days for completion of work on Bid Form. This will be used to determine the date for Substantial Completion.**

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- D. Contractor must achieve Final Completion no later than 30 days after Substantial Completion.

END OF SECTION 01 11 00

SECTION 01 14 00 - GENERAL CONSTRUCTION REQUIREMENTS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Special Provisions.
2. Commencement Activity.
3. Quality Control.
4. Pre-final and Final/Occupancy Inspections
5. Project Closeout.

1.2 SPECIAL PROVISIONS

A. Project:

1. The Project is the total construction for which the Contractor is responsible, including all labor, materials and equipment used or incorporated in such construction.

B. Work:

1. The Work comprises the completed construction designed under the Project and includes labor necessary to produce such construction, and materials and equipment to be incorporated in such construction.

C. Contract Documents includes the following (See General Conditions 1.1.1 for definition):

1. Project Manual. (See General Conditions 1.1.7 for definition) The Project Manual is composed of the following:
 - a. The Bidding Requirements.
 - b. The Contract Forms.
 - c. The Conditions of the Contract.
 - d. The Specifications. (See General Conditions 1.1.6 for definition)
2. Drawings (See General Conditions 1.1.5 for definition)
3. Addenda (See Instructions to Bidders 1.3 for definition)
4. Other Documents as identified in the Contract for Construction, the General Conditions of the Contract for Construction, and Supplementary General Conditions

D. Demolition:

1. All existing Improvements on the site indicated on the Drawings to be demolished, shall be removed by Contractor. Use such methods as required to complete the work in compliance with all governing authorities and utility company requirements. All existing utility connections shall be disconnected, properly capped and removed by the Contractor. Complete removal of existing foundation walls or

footings is required under new construction or other new foundations. Remove all below-grade wood and metal. Any existing basements, cisterns and/or other below grade voids shall be filled with compatible fill material suitable for proposed constructions and compacted per specific requirements. Completely remove cisterns located under new construction. All debris, rubbish, salvage and other materials shall be removed from the site. Protect all adjacent properties and structures, and existing buildings from damage.

E. Utilities:

1. It is the Contractor's responsibility to coordinate with the appropriate utility companies actual location of mains serving the site and route the building utility lines in the most direct route.
2. The location of utilities existing in the building as indicated on the Drawings may be modified by the Contractor to accommodate a more direct route to the utility connection location with written approval from Architect.

F. Permits and Fees:

1. The Contractor is responsible for verifying any and all fees required from all utilities, agencies and authorities having jurisdiction. The Contractor shall obtain and pay for the Building Permit and all other permits and governmental fees, licenses and inspections required, whether specifically referenced or not.
2. The Contractor is to include in the bid the cost of all charges payable to State, local or special community development agencies and any additional fees as required for the completion of the project, including, but not limited to:
 - a. Water company connection fees and charges
 - b. Electrical company charges.
 - c. Telephone company charges.
 - d. Sanitary sewer connection fees and charges.
 - e. Gas Company charges.

- G. Historical and Archeological Finds:** All items having any apparent historical or archeological interest discovered in the course of construction must be carefully preserved. The Contractor must leave the archeological find undisturbed and immediately report it to the Architect. Work on the project may be stopped until such find is analyzed, inspected and removed by the Governing Authority.

1.3 COMMENCEMENT ACTIVITY

- A.** Evidence that the Contractor has started procurement of materials, preparation and submission of shop drawings, preparation of subcontracts and other preparatory work must satisfy the requirement that work began upon receipt of Notice to Proceed.

1.4 QUALITY CONTROL

A. Testing:

1. Employ the services of an independent testing laboratory to take samples, perform tests and make inspections. The costs for such laboratory and tests shall be borne by the Contractor.
2. Submit testing reports as per Architect.

3. Refer to Section 01 45 00-Quality Control for additional requirements.

1.5 PRE-FINAL AND FINAL/OCCUPANCY INSPECTIONS

- A. The Contractor is to notify in writing, the Architect, that the work is complete for a Pre-Final Inspection (also referred to as "Final Punchlist Inspection". The Contractor must provide the Architect at least 10 calendar days advance notice.
- B. The Contractor is to diligently complete all punchlist items before a Final/Occupancy Inspection is scheduled.

1.6 PROJECT CLOSEOUT

- A. Cleaning during construction:
 1. The premises and the job site shall be maintained in a reasonable neat and orderly condition and kept free from accumulations of waste materials and rubbish during the entire construction period. Remove crates, cartons, and other flammable waste materials or trash from the work areas at the end of each working day. Do not allow debris to blow onto adjoining properties. Respond immediately to request from adjoining property owners to remove any debris that does manage to show up on adjoining properties.
 2. Maintain the project in clean condition until the Owner accepts the building.
 3. Refer to Section 01 74 23 - Cleaning for additional requirements.
- B. Closeout Procedures:
 1. Refer to Section 01 77 00 - Closeout Procedures for additional requirements.
- C. Closeout Submittals:
 1. Before the project can be closed out, the Contractor shall have provided all submittals required by the Contract Documents. All submittals required by the Contract Drawings or Specifications shall be sent to the Architect for review and coordination, in accordance with the requirements of the respective Drawing or Specification section. Any items that the Architect determines are incomplete or incorrect shall be corrected and resubmitted.
 2. Refer to Section 01 78 00 - Closeout Submittals for additional requirements.
 3. Refer to Section 01 78 46 - Closeout Maintenance Materials for additional requirements.
- D. Retainage:
 1. The Architect will assign a monetary value to all punchlist items not completed, and to all required submittals not received, as of the date of "Final Acceptance" and an amount equal to 200 percent of the total value of those items shall be retained and/or deducted from the Contractor's final payment until the Contractor demonstrates to the Architect's satisfaction that such items have been completed or corrected. Refer to the General Conditions and Supplementary General Conditions for additional information regarding retainage.

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END OF SECTION 01 14 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section Includes:
 - 1. Procedures for exercising alternates.
 - 2. Identification and description of alternates.
- B. All items, either indicated on the Drawings or specified in the Project Manual, not specifically indicated to be included in a specific alternate is to be included within the base bid scope of work.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Bidding Requirements: Quotation of cost for each alternate as listed on Proposal Form.
- B. Owner-Contractor Agreement: Alternates accepted by Owner for incorporation into the work.
- C. Sections of Specifications identified by work of each alternate.

1.3 PROCEDURES

- A. Alternates will be exercised at the option of Owner.
- B. Coordinate related work and modify surrounding work as required to complete the Work, including changes under each Alternate, when acceptance as designated in Owner-Contractor Agreement.
- C. All Alternates shall be bid. Base Bid to be all work as shown on the Drawings and Specifications, except Alternates.
- D. Owner reserves the right to accept or reject any and all Alternates as determined solely at the discretion of the Owner. Alternates may be accepted or rejected independently from one another, and in any order of priority or hierarchy as determined by the Owner.

1.4 SCHEDULE OF ALTERNATES

A. ALTERNATE NO. 1: VAULT REMOVAL

1. Give the amount to be ADDED to the Base Bid for the following:
 - a. Remove existing pre-cast vault structure in its entirety.
 - b. Include a credit amount in this alternate for removing Base Bid work no longer required with vault removal.

B. Base Bid to include:

- a. Removal of interior partition, all safe deposit boxes, and shelving inside vault.
- b. Removal and replacement of flooring in vault.
- c. Removal and replacement of light fixtures in vault.
- d. Painting within vault.
- e. Removal and replacement of gypsum board on outside face of vault. Existing wood furring to remain.
- f. Remove existing vault door and salvage for re-installation in vestibule wall. Provide steel support structure as indicated on Drawings.

A. ALTERNATE NO. 2: ROOFING REPLACEMENT

1. Give the amount to be ADDED to the Base Bid for the following:
 - a. Remove existing shingles and underlayment down to wood sheathing; refer to Drawings AD102 and A102 to identify alternate area of work.
 - b. Install new underlayment and asphalt composition shingles at alternate area of work.

B. Base Bid to include:

1. Existing underlayment and shingles to remain at alternate area of work.
2. Removal and replacement of gutters and downspouts at existing roof.
3. Roofing work at new construction.
4. Roofing work to infill at areas of canopy demolition; refer to Drawings AD102 and A102 to identify alternate areas of work.

END OF SECTION 01 23 00

SECTION 01 29 73 - SCHEDULE OF VALUES

1.1 REQUIREMENTS INCLUDES

- A. Section Includes:
 - 1. General Requirements.
 - 2. Format and Content.

1.2 GENERAL REQUIREMENTS

- A. Submit to the Architect/Engineer a Schedule of Values allocated to the various portions of the Work.
- B. Upon request of the Architect/Engineer, support the values with data which will substantiate their correctness.
- C. The Schedule of Values, unless objected to by the Architect/Engineer, shall be used as the basis for the Contractor's Application and Certificate for Payment.

1.3 FORMAT AND CONTENT

- A. Type schedule on AIA Document G703, Continuation Sheet for Application and Certificate for Payment. Identify schedule with:
 - 1. Title of Project as listed on cover of Project Manual
 - 2. Architect project number.
 - 3. Name and Address of Contractor.
 - 4. Contract Designation.
 - 5. Date of submission.
- B. Schedule shall list the installed value of the component parts of the Work in sufficient detail, as determined by the Architect, to serve as a basis for computing values for progress payments during construction.
 - 1. Follow the table of contents of this Project manual as the format for listing component items.
 - 2. Identify each line item with the number and title of the respective major section of the specifications.
 - 3. Identify separate line items for all items for materials and labor.
 - 4. Identify further breakdown for any and all items as determined by the Architect.
- C. For Mechanical and Electrical Scope of Work, major products or operations are to be listed.
- D. For the various portions of the work:
 - 1. Each item shall include a directly proportional amount of the contractor overhead and profit.
 - 2. For items on which progress payments will be requested for stored materials, break down the value into:
 - a. The cost of the materials, delivered and unloaded, with taxes paid.
 - b. The total installed value.

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E. The sum of all values listed in the schedule shall equal the total Contract Sum.

END OF SECTION 01 29 73

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section Includes:
 - 1. Administrative and supervisory personnel.
 - 2. Submittals.
 - 3. Contractor quality control.
 - 4. Coordination Drawings.
 - 5. Project coordination.
- B. Procedures for preparation, updating and submittal of Construction Progress Documentation.

1.2 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. Project Coordination Administrator: Contractor Representative experienced in administration, supervision, and quality control of building expansion and alteration construction, similar to Work of this Project, including mechanical and electrical work.
- B. Project Field Superintendent:
 - 1. Contractor Representative experienced in general field supervision of building construction, similar to Work of this Project, including mechanical and electrical work, to supervise, direct, inspect and coordinate Work of Contractor, subcontractors, suppliers and installers, and expedite Work to assure compliance with Construction Schedules.
 - 2. Superintendent must read, write, and speak English fluently.
 - 3. Superintendent must be present at the Project site whenever work is being performed. Superintendent must remain on the Project from Notice to Proceed to Substantial Completion. Do not change personnel without written permission from the Owner.

1.3 SUBMITTALS

- A. Submit list of Contractor's principal staff assignments, including Project Coordination Administrator, Project Field Superintendent, Quality Control Representative, and other personnel in attendance at site; identify their duties and responsibilities.
- B. Submit all items for execution of Contract as listed in Section 00 43 93 – Contractor's Bid Submittal checklist.
- C. Submit shop drawings, product data, and other required submittals, in accordance with Section 01 33 00 - Submittal Procedures, for review and compliance with Contract Documents, for field dimensions and clearances, for relation to available space, and for relation to Work by Owner or separate Contracts.

- D. Submit Requests for Information and interpretation of Contract Documents in a timely manner and obtain replies from Architect in accordance with the Contract.

1.4 CONTRACTOR QUALITY CONTROL

- A. Perform project quality control in accordance with requirements in the Contract.
- B. Coordinate scheduling of inspection and testing required by individual specification Sections and in accordance with Section 01 45 00 - Quality Control.

1.5 COORDINATION DRAWINGS

- A. Prepare and distribute coordination drawings where close coordination is required for installation of Products and materials fabricated off-site by separate entities, and where limited space availability requires maximum utilization of space for efficient installation of different components. Show interrelationship of components shown on separate shop drawings. Indicate required installation sequences.

1.6 PROJECT COORDINATION

- A. Coordinate construction activities and work of all trades under various Sections of these Specifications and Work of Contract to facilitate orderly installation of each part of Work. Coordinate construction operations included under different Sections of Specifications and Contract that are dependent upon each other for proper installation, connection, and operation.
- B. Where installation of one part of Work is dependent on installation of other components, either before or after that part of Work, schedule construction activities in sequence required to obtain uninterrupted installation.
- C. Obtain drawings, manufacturer's product data, instructions, and other data to provide a complete and proper installation.
 - 1. Check field dimensions prior to installing products. Verify necessary clearances and means of access from equipment storage to final position.
 - 2. Make data and information available to trades involved.
- D. Ensure that utility requirements of operating equipment are compatible with building utilities. Coordinate Work of various specification Sections for installation and final connection of equipment.
 - 1. Assure that mechanical, plumbing, and electrical rough-ins have been properly located.
- E. Coordinate space requirements and installation of mechanical, plumbing, and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, conduits, and wiring, as closely as possible; make runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. Where availability of space is limited, coordinate installation of different components to ensure maximum accessibility for required maintenance, service, and repair.

- G. Provide for installation of items scheduled for future installation.
- H. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Prepare memoranda for Architect and separate contractors where coordination of their work is required.
- I. In finished areas, conceal pipes, ducts, conduits, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.
- J. Coordinate completion and clean up of Work of separate Sections in preparation for completion of work per the Contract.
- K. After Owner occupancy of Project, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize to Owner.

END OF SECTION 01 31 00

SECTION 01 31 19 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Contractor participation in pre-bid conference, pre-construction conferences, progress meetings, and pre-installation meetings.
2. Architect shall schedule and chair Project Meetings and prepare summary minutes for distribution by Contractor to all in attendance.

1.2 PRE-BID CONFERENCE

A. Architect will administer pre-bid conference to provide further understanding of Scope of Work.

B. Attendance:

1. Architect.
2. All prospective bidding Contractors, Subcontractors, Suppliers and Vendors.
3. Attendance is not required, but strongly encouraged.

C. Agenda:

1. Review Notice-to-Bidders.
2. Review Bid Requirements and Contractor's Bid Submittal Checklist.
3. Review Summary of Work.
4. Review Construction Document set.
5. Review Project Site (if necessary).
6. Questions and Answers.

D. Architect will notify all bidders as to time and place of Pre-Bid Conference.

1.3 PRE-CONSTRUCTION CONFERENCES

A. Architect will administer pre-construction conference.

B. Attendance:

1. Architect.
2. Owner's Representative.
3. Contractor's Project Manager.
4. Contractor's Job Superintendent.

C. Agenda:

1. Execution of Owner-Contractor Agreement.
2. Exchange of preliminary submittals.
3. Submission of executed bonds and insurance certificates.
4. Distribution of Contract Documents.
5. Submission of Schedule of Values. (If not required before hand).
6. Designation of personnel representing the parties in Contract.
7. Procedures and processing of Requests for Information, field decisions, submittals, substitutions, Applications for Payment, proposal requests, Change Orders, and contract closeout procedures.
8. Scheduling.
9. Construction facilities and temporary controls.
10. Notice to Proceed.

D. Architect will record minutes and distribute copies to Contractor and Owner and those affected by decisions made. Contractor is responsible for distribution of copies to Subcontractors, Suppliers and Vendors.

E. Architect will administer mobilization conference at Project site for clarification of Contractor responsibilities in use of site and for review of administrative procedures.

1.4 PROGRESS MEETINGS

A. Architect shall schedule and administer Project Meetings throughout progress of the Work not less frequently than every month. Additional Project Meetings shall be scheduled as appropriate to construction activity.

B. Attendance:

1. Architect.
2. Owner's Representative.
3. Contractor's Project Manager.
4. Contractor's Job Superintendent.
5. Major Subcontractors and Suppliers.
6. Contractor's Quality Control Representative.
7. Others as appropriate to agenda topics.

C. Agenda:

1. Review of and corrections to minutes of previous meetings.
2. Review of Work progress and/or payment progress.
3. Field observations, problems, and decisions.
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.

12. Effect of proposed changes on progress schedule and coordination.
13. Status of pending changes and substitutions.
14. Other business relating to Work.
15. Review of Construction Progress Documentation.

- D. Architect will record minutes and distribute copies to Owner and Contractor. Contractor shall distribute copies to all others.
- E. Contractor shall hold separate meetings with workers, sub-contractors and suppliers to coordinate means and methods of construction, and jobsite safety. Do not use Owner/Architect Progress Meetings for such purpose.

1.5 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections or as determined necessary by Architect, convene a pre-installation meeting at work site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect seven days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 1. Review conditions of installation, preparation and installation procedures.
 2. Review coordination with related work.
 3. Agenda items listed in individual specification Sections.
 4. Installation schedule.
- E. Architect will record minutes and distribute copies to participants, and those affected by decisions made.

END OF SECTION 01 31 19

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Construction Progress Schedule.
2. Contractor as-built drawings.
3. Provisions for format, content, revisions, submittals and distribution.

1.2 CONSTRUCTION PROGRESS SCHEDULE

A. Format:

1. Prepare Schedules as horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work day of each week.
2. Sequence of Listings: The Table of Contents of this Project Manual.
3. Form: Contractor's option.

B. Content:

1. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
2. Identify each item by major Specification section number.
3. Provide sub-schedules to define critical portions of entire Schedule.
4. Show accumulated percentage of completion of each item, and total percentage of Work completed, to correspond with Application for Payment. Percentage of completion shall not include stored materials.
5. Provide separate schedule of submittal dates for shop drawings, product data, and samples and dates reviewed submittals will be required from Architect. Show dates for selection of finishes.
6. Show delivery dates for Owner furnished items, if any.
7. Coordinate content with Section 01 29 73 - Schedule of Values.

C. Revisions:

1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope and other identifiable changes.
3. Provide narrative report to define problem areas, anticipated delays and impact on Schedule. Report corrective action taken or proposed and its effect.

D. Submittals:

1. Submit initial Schedules immediately following Award of Contract. After review, revise data and immediately submit for re-review.

2. Submit up-dated Progress Schedules with each Application and Certificate for Payment.
3. An updated Progress Schedule is required for review/consideration for Application and Certificate for Payment.
4. Submit under transmittal letter.

E. Distribution:

1. Distribute copies of reviewed schedules to Architect job site file, subcontractors, suppliers and other concerned entities including separate contractors.
2. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in Schedules.

1.3 CONTRACTOR AS-BUILT DRAWINGS

A. Format:

1. Contractor's job superintendent to record as-built conditions onto a single set of project drawings for all trades included in scope of work.
2. As-built set to be kept on site at all times.
3. Documentation may be hand written in ink or pasted directly onto drawings. All information must be considered to be permanently affixed.

B. Content:

1. Include work of all trades included in scope of work.
2. Include all changes, errors, deviations, omissions, additions, clarifications and corrections.
3. Include any item installed in a location other than that shown on contract drawings.
4. Correct any inaccurate or altered dimension.

C. Revisions:

1. As-built drawings shall be updated daily with all work completed.
2. Contractor job superintendent to be responsible for subcontractor information on as-built drawings.

D. Submittals:

1. As-built drawings may be reviewed at progress meetings or periodically as requested by Architect to review entries to date.

E. Distribution:

1. As built drawings shall be given to Architect prior to release of final payment.
2. Refer to Section 01 78 00 - Closeout Submittals.

END OF SECTION 01 32 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Submittal Schedule.
2. Submittal Requirements.
3. Shop Drawings.
4. Electronic files provided by the Architect.
5. Product Data.
6. Samples.
7. Manufacturer's Information.
8. Review by Contractor and Architect.
9. Re-submittals.
10. Distribution.

1.2 SUBMITTAL SCHEDULE

- A.** Submit to the Architect a schedule listing all submittals required for review as required in the individual specifications sections.
- B.** List submittals by specification section as listed in the index.

1.3 SUBMITTAL REQUIREMENTS

A. Formats:

1. Submit all drawings and technical data electronically in PDF format.
 - a. Furnish all submittals specified in all sections of the specifications.
 - b. Submit each section under a separate transmittal for clarity and ease of review.
 - c. Make a complete submittal for each section; do not issue multiple submittals per section.
 - d. Compile all sheets, drawings, and product data into a single electronic file for review. Do not submit multiple PDF files per sheet or item.
 - e. Identify manufacturer and subcontractor/supplier.
 - f. Submit Material and Safety Data Sheets for all products and materials.
 - g. Name each PDF file to match specifications title and number, matching that as listed in the project manual.
2. Submit to Architect via Architect's project management website specific to this project.
3. Submit actual samples for finishes, colors, and textures for approval via mail or hand delivery.

- B.** Transmit submittals in accordance with approved Progress Schedule and in such sequence to avoid delay in the Work or work of other contracts.

- C. Apply Contractor's stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria and coordination of information with requirements of Work and Contract Documents.
- D. Coordinate submittals into logical groupings to facilitate interrelation of the several items:
 - 1. Finishes which involve Architect selections of colors, textures, or patterns.
 - 2. Associated items which require correlation for efficient function or for installation.

1.4 SHOP DRAWINGS

- A. Present in a clear thorough manner, drawn by professional draftsman.
- B. Identify project with title as shown on cover of Project Manual; identify each element of drawings by reference to sheet number and detail, schedule, or room number on Contract Documents.
- C. Identify field dimensions; show relation to adjacent or critical features of Work or products.
- D. Sheet Size:
 - 1. Minimum: 8-1/2 x 11 inches.
 - 2. Maximum: 30 x 42 inches.

1.5 ELECTRONIC FILES PROVIDED BY THE ARCHITECT

- A. Architect may make available, at no cost, base xref drawings in AutoCAD format for contractor's use in preparing shop drawings.
- B. AutoCAD version of electronic files will be the latest version being utilized in the Architect's office. The Architect has no obligation to provide electronic files in a format that may be an old, outdated, reduced or simplified version of that being utilized in the Architect's office.
- C. Electronic files are an instrument of the Architect's service, and are the property of the Architect.
- D. The use of the information contained in the electronic files is at the sole risk of the user.
- E. The use of the electronic files does not relinquish the contractor from responsibilities for site and field verification of spaces, construction, conditions, requirements, dimensions, etc.

1.6 PRODUCT DATA

- A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.

- B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work. Delete information not applicable.
- C. Provide manufacturer's published catalog pages and industry cutsheets, with all items and options marked as appropriate to the project.

1.7 SAMPLES

- A. When finishes are specified on the Drawings, submit samples of the specified finish for approval.
- B. When finishes are not specified on the Drawings, submit full range of manufacturer's standard finishes, except when more restrictive requirements or price groups are specified, indicating colors, textures, and patterns, for Architect's selection.
- C. Submit samples to illustrate functional characteristics of products, including parts and attachments.
- D. Label each sample with identification required for transmittal letter.
- E. Submit number of samples specified in individual specifications sections but not less than three (3).
- F. Special circumstances may require additional samples for determination of acceptance, such as textures, patterns, colorways, etc. Provide sample in the quantity and/or size as required for this determination. Requirements to be determined solely by the Architect. All such samples will be returned to the Contractor, less those retained for Owner and Architect files.
- G. Samples for selection of finishes need to be submitted as actual samples of the actual colors, materials and textures for proper selection and review of available choices. Samples for finishes already selected as indicated in the Drawings may be color charts in lieu of actual samples, if acceptable to the Architect.
- H. All samples may be retained for Owner and Architect files.
- I. See individual Specification sections for additional information and requirements.

1.8 MANUFACTURER'S INFORMATION

- A. Manufacturer's instructions for storage, protection, preparation, assembly, installation, adjusting, balancing and finishing.
- B. Installation details, anchoring requirements or other information specifically required by manufacturer.
- C. Specific information or details required by Manufacturer to uphold warranty of product specified.

1.9 CONTRACTOR'S REVIEW

- A. Review submittals prior to transmittal; verify subcontractor's field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.

- B. Coordinate submittals with requirements of Work and of Contract Documents.
- C. Affix a stamp and sign each drawing, manufacturer's data, sample, etc. as follows:

This submittal has been reviewed by <i>(Name of Contractor)</i> and approved with respect to the means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incidental thereto. <i>(Name of Contractor)</i> also warrants that this submittal complies with contract documents and comprises no variations or increase in contract price thereto. By:- _____ Date: _____

- D. Notify Architect in writing at time of submittal, of any deviations from requirements of Contract Documents. Architect will neither accept incomplete submittals, nor those which in the Architect's opinion, have not been properly reviewed by the Contractor.
- E. Do not fabricate products or begin work which requires submittals until return of submittal with Architect acceptance.
- F. Submittals which have not been thoroughly reviewed by Contractor prior to being forwarded to Architect will be rejected and returned for review.

1.10 ARCHITECT'S REVIEW

- A. Architect will review shop drawings, product data, and samples and return submittals within a reasonable time frame for complete review and approval.
- B. Architect's review is for conformance with information given and design concept expressed in the Contract Documents. The review shall not constitute approval of safety precautions, or of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- C. Review of shop drawings does not authorize changes to the contract sum unless stated in a separate letter or change order.

1.11 RE-SUBMITTALS

- A. Make re-submittals under procedures specified for initial submittals; identify changes made since previous submittals.

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1.12 DISTRIBUTION

- A. Duplicate and distribute reproductions of shop drawings, copies of product data, and samples, which bear Architect's stamp of approval, to job site file, Contractor's Record Documents file, sub-contractors, suppliers and other entities requiring information.

END OF SECTION 01 33 00

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section Includes:
1. Specification format and content.
 2. Quality assurance.
 3. Reference standards.
 4. Abbreviations.

1.2 SPECIFICATION FORMAT AND CONTENT

- A. Specification Format: Specifications are organized into Divisions and Sections based on Construction Specifications Institute (CSI) Division format and Master Format numbering system.
- B. Specification Content: This Specification uses certain conventions in use of language and intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated type. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated shall be interpolated as the sense required. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and context of Contract Documents so indicates.
 2. Imperative and streamlined language is used generally in Specifications. Requirements expressed in imperative mood are to be performed by Contractor. At certain locations in text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by Contractor, or by others when so noted.
 3. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

1.3 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes. Such standards are made a part of Contract Documents by reference.
- B. Conform to reference standard by date of issue current on original date of issue indicated on Contract Documents.
- C. Obtain copies of standards when required by Contract Documents.

- D. Maintain copy at Project Site during submittals, planning, and progress of specific Work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- F. The contractual relationship, duties, and responsibilities of the parties in Contract nor those of Architect shall not be altered from Contract Documents by mention or inference otherwise in any reference document.

1.4 REFERENCE STANDARDS

- A. **Conflicting Requirements:** Where compliance with two or more standards is specified, and the standards may establish different or conflicting requirements for minimum quantities or quality levels. Refer requirements that are different, but apparently equal, and uncertainties to Architect for decision before proceeding.
 - 1. **Minimum Quantity or Quality Levels:** Quantity or quality level shown or specified shall be the minimum provided or performed. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for context of requirements. Refer uncertainties to Architect for decision before proceeding.
- B. **Copies of Standards:** Each entity engaged in construction on Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with Contract Documents.
 - 1. Where copies of standards are needed for performance of a required construction activity, Contractor shall obtain copies directly from publication source.

1.5 ABBREVIATIONS

- A. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in Specifications or other Contract Documents, they mean the recognized name of trade association, standards generating organization, authority having jurisdiction, or other entity applicable to context of text provision. Refer to "Encyclopedia of Associations," published by Gale Research Company, available in most libraries.

END OF SECTION 01 42 00

SECTION 01 45 00 - QUALITY CONTROL

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. General Requirements.
2. Qualifications.
3. Laboratory Requirements.
4. Building Survey.
5. Quality Control Procedures.
6. Testing and Inspection Laboratory Services.
7. Contractor Field Inspection and Testing.
8. Contractor's Daily Report.
9. Contractor's Test and Inspection Reports.
10. Non-Compliance Check-Off List.
11. Completion and Inspection of Work.

1.2 GENERAL REQUIREMENTS

A. Survey:

1. Engage licensed surveyor, without extra cost to the Owner.
2. Assure correct position of building on site, establish correct levels, lines and grades, verify column centers, walls, trenches, establish grades and bench marks at all grading and drainage improvements, and otherwise fully and completely layout work required by this Contract.

B. Inspection, Sampling, and Testing is required for:

1. Soils Compaction Control
2. Cast-In-Place Concrete
3. Mortar, Grout and CMU Units
4. Anchor Bolt Torque
5. Structural Steel Connections
6. Mechanical testing
7. Electrical testing

C. Employment of Testing Laboratory or Inspector shall in no way relieve Contractor of his obligation to perform Work in accordance with Contract and Contract Documents.

1.3 QUALIFICATIONS

A. Testing laboratory's qualifications:

1. Testing laboratory should be pre-qualified prior to bidding.
2. Testing laboratory must have a registered professional engineer as full time staff.
3. Testing laboratories wishing to be included on the pre-qualified list herein shall submit qualifications in writing to the Architect no later than ten (10) days prior to the bid.

B. Pre-qualified testing laboratories:

1. ECS Southeast, LLP
1762 Watterson Trail; Louisville, KY 40299
502-493-7100; 502-493-8190 fax
2. Hagerty Engineering, Inc.
335 Spring Street B; Jeffersonville, IN 47130
502-553-3211
3. Asher Engineering, Inc.
1021 South Floyd Street; Louisville, KY 40203
502-589-0073; 502-589-0076 fax
4. ATC Group Services / Cardno ATC
11001 Bluegrass Parkway, Suite 250; Louisville, KY 40299
502-710-0264; 502-267-4072 fax

1.4 LABORATORY REQUIREMENTS

- A. Meet basic requirements of ASTM E 329 for inspection and testing agencies for concrete and steel as used in construction.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 1. Comply with specified standards; ASTM, other recognized authorities, and as specified.
 2. Ascertain compliance with requirements of Contract Documents.
- C. Promptly notify Architect/Engineer and Contractor of irregularities or deficiencies of Work which are observed during performance of services.
- D. Promptly submit two (2) copies of all reports, inspections and tests to Architect, to include the following:
 1. Date, project title and number.
 2. Testing Laboratory name and address.
 3. Name and signature of inspector.
 4. Dates of inspection, sampling, and test.
 5. Record of temperature and weather.
 6. Identification of product and specification section.
 7. Location in project.
 8. Type of inspection or test.
 9. Observations regarding compliance with Contract Documents.

1.5 BUILDING SURVEY

A. Horizontal Control Survey:

1. After earthwork is completed and before any foundation excavation commences, Contractor shall run and maintain a closed, offset traverse outside the building perimeter a suitable distance with 2" x 2" hub stakes driven flush and bearing a Surveyor's tack at all intervening building grids.
 - a. Each hub shall be flagged, protected, and identified by a clearly visible guard stake.
 - b. Appropriate temperature, and sag corrections must be applied if traverse is measured by Surveyor's chain.
2. If transit visibility between opposing hubs straddling the building is impossible, additional lines of hubs tacked, flagged, protected, and identified as above) shall be installed along lines through the building and tied into the perimeter traverse.
3. The completed traverse (if not run by) shall be checked, drawn up and certified by a Licensed Surveyor employed by the Contractor and approved by the Architect.
 - a. An experience record and professional references shall be submitted along with a request for the approval of any Surveyor.
 - b. One copy of the certified drawing shall be posted in the Contractor's field office for reference.
 - c. Additional copies of the drawing shall be posted in the Contractor's field office for reference.
 - d. Until such time as all foundation; reinforced concrete piers and columns; and steel column anchor bolts are in place, all stakes will be maintained.
 - e. The services of the approved Surveyor shall be secured by the Contractor to re-establish all hubs damaged or lost for any reason.
4. All foundations; concrete column dowels and forms; and steel column anchor bolts shall be located by transits set up only over traverse hub stakes.
 - a. Anchor bolts shall be secured in final position by fixing into wood templates, or other approved methods before any concrete is cast.
 - b. The Architect reserves the right to reject the equipment or the personnel.

B. Vertical Control:

1. After earthwork is completed, the Contractor shall establish building bench marks of 2" Ø i.d. Galvanized Pipe driven a minimum of 4'-0" into ground and having tops level with finished ground floor.
 - a. Sufficient bench marks shall be installed for each ground floor level so that no level shot will exceed 200 feet.
 - b. Level circuits will begin at and close to bench marks referenced on the site plans.
2. The approved Licensed Surveyor shall include in his certification that he has checked (or set) all herein required bench marks.

1.6 QUALITY CONTROL PROCEDURES

- A. Monitor quality control over Contractor staff, subcontractors, suppliers, manufacturer's, products, services, site conditions, and workmanship.
- B. Comply fully with manufacturer's published instructions, including each step in sequence of installation.

- C. Should manufacturer's published instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as a minimum quality for Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons who are thoroughly qualified and trained in their respective trade, to produce workmanship of specified quality.
- F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- G. Perform tests required by governing authorities having jurisdiction and utilities having jurisdiction.

1.7 TESTING AND INSPECTION LABORATORY SERVICES

A. Selection and Payment:

- 1. Employment and payment for services of an Independent Testing and Inspection Laboratory to perform specified testing and inspection, by Contractor.
- 2. Employment of Independent Testing and Inspection Laboratory in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents

B. Quality Assurance:

- 1. Comply with requirements of ASTM C 802, ASTM C 1077, ASTM C 1093, ASTM D 290, ASTM D 3740, ASTM D 4561, ASTM E 329, ASTM E 543, ASTM E 548, and ASTM E 699.
- 2. Laboratory: Authorized to operate in State in which Project is located.
- 3. Laboratory Staff: Maintain a full time registered engineer on staff to review services.
- 4. Testing Equipment: Calibrated at reasonable intervals with devices of and accuracy traceable to either National Bureau of Standards or accepted values of natural physical constraints.

C. Laboratory Responsibilities:

- 1. Contractor should ensure the Laboratory has the following responsibilities and limits on authority (See D).
- 2. Test samples of mixes submitted by Contractor.
- 3. Provide qualified personnel at Project site. Cooperate with Architect and Contractor in performance of services.
- 4. Perform specified sampling, testing, and inspection of Products in accordance with specified standards.
- 5. Determine compliance of materials and mixes with requirements of Contract Documents.
- 6. Promptly notify Contractor Quality Control Representative and Architect of observed irregularities or non-conformance of Work or Products.
- 7. Perform additional tests as required by Architect.
- 8. Attend appropriate preconstruction meetings and progress meetings.

D. Limits on Authority:

1. Laboratory may not release, revoke, alter, or expand on requirements of Contract Documents.
2. Laboratory may not approve or accept any portion of Work.
3. Laboratory may not assume any duties of Contractors.
4. Laboratory has no authority to stop Work.

1.8 CONTRACTOR FIELD INSPECTION AND TESTING

- A. Contractor: Test and Inspect Work provided under this Contract to ensure Work is in compliance with Contract requirements. Required tests and inspections are indicated in each individual Specification Section.
- B. Preparatory Inspection: Performed prior to beginning Work and prior to beginning each segment of Work and includes:
 1. Review of Contract requirements.
 2. Review of shop drawings and other submittal data after return and approval.
 3. Examination to assure materials and equipment conform to Contract requirements.
 4. Examination to assure required preliminary or preparatory Work is complete.
- C. Initial Inspection: Performed when representative portion of each segment of Work is completed and includes:
 1. Performance of required tests.
 2. Quality of workmanship.
 3. Review for omissions or dimensional errors.
 4. Examination of products used, connections and supports.
 5. Approval or rejection of inspected segment of Work.
- D. Follow-Up Inspections: Performed daily, and more frequently as necessary, to assure non-complying Work has been corrected.
- E. Testing and Inspection: Perform testing and inspection in accordance with requirements in individual Sections.

1.9 CONTRACTOR'S DAILY REPORT

- A. Submit daily report to Architect, for days that work was performed. Include the following information:
 1. Contractor name and address.
 2. Job reference and information.
 3. Date, weather, minimum and maximum temperatures, rainfall, and other pertinent weather occurrences.
 4. Daily workforce of Contractor and subcontractors, by trades.
 5. Description of work started, ongoing work, and work completed by each subcontractor.
 6. Coordination implemented between various trades.
 7. Approval of substrates received from various trades.
 8. Nonconforming and unsatisfactory items to be corrected.
 9. Remarks.

10. Reports may be faxed to Architect no more than one week's worth of reports at one time. Submit daily if requested by Architect.

1.10 CONTRACTOR'S TEST AND INSPECTION REPORTS

- A. Prepare and submit, to Architect, a written report of each test or inspection signed by Contractor Quality Control Representative performing inspection within two (2) days following day inspection was made.
- B. Include the following on written reports of inspection:
 1. Cover sheet prominently identifying that inspection "CONFORMS" or "DOES NOT CONFORM" to Contract Documents.
 2. Date of inspection and date of report.
 3. Project name, location, solicitation number, and Contractor.
 4. Names and titles of individuals making inspection, if not Contractor's Project Field Superintendent.
 5. Description of Contract requirements for inspection by referencing Specification Section.
 6. Description of inspection made, interpretation of inspection results, and notification of significant conditions at time of inspection.
 7. Requirements for follow-up inspections.

1.11 NON-COMPLIANCE CHECK-OFF LIST

- A. Maintain check-off list of Work that does not comply with Contract Documents, stating specifically what non-complying, date faulty Work was originally discovered, and date Work was corrected. No requirement to report deficiencies corrected same day it was discovered. Submit copy of Non-Compliance Check-Off List of non-complying work items to Architect on a weekly basis.

1.12 COMPLETION AND INSPECTION OF WORK

- A. Prior to final acceptance by Architect, submit a certification signed by Contractor to Architect stating that all Work has been inspected and all Work, except as specifically noted, is complete and in compliance with Contract Documents.
- B. Record Documents:
 1. By Contractor Quality Control Representative. Ensure that "As-Builts" required are marked to show any deviations which have been made during the course of construction and are kept current on a daily basis. Upon completion of the Work, certify the accuracy of the "As-Builts" and submit to Architect.
 2. Refer to Section 01 32 00 - Construction Progress Documentation.
 3. Refer to Section 01 78 00 - Closeout Submittals.

END OF SECTION 01 45 00

SECTION 01 51 00 - TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Responsibility of Owner and Contractor.
2. Provisions for temporary electrical power.
3. Provisions for temporary lighting.
4. Provisions for temporary heating and ventilation
5. Provisions for temporary water.
6. Provisions for temporary telephone, fax and internet.
7. Regulatory Agency Requirements.

1.2 RESPONSIBILITY

A. Responsibility of Owner:

1. Owner is not responsible for the establishment or payment of any temporary utilities.
2. Pay all utility bills from the utility companies for Owner's existing established utility services within existing buildings and construction limits for the duration of construction.
3. Owner is not responsible for any costs directly to the contractor for non-established utility items including such items as fuels, tanks, generators, extensions, hookups, feeds, cords, hoses, wiring, etc. as may be required by the contractor for their ability to provide needed temporary utilities specified herein.
4. Owner is not responsible for any Contractor job overhead costs such as cell phones, fax, internet, water hauling, etc. that may be required as part of the construction activities.

B. Responsibility of Contractor:

1. Pay all utility bills for all new or temporary utility services within construction limits for duration of construction.
2. Coordinate establishment, timing and all requirements of all temporary utilities with all utility companies and authorities having jurisdiction.
3. Coordinate establishment, timing and all requirements of all permanent utilities, including new services and/or reworking of existing services, with all utility companies and authorities having jurisdiction.
4. Provide, install, re-install, remove, coordinate, etc, any and all temporary utilities to all areas of the site and project resulting from any and all phasing of the work.
5. Provide temporary electrical power, as required.
6. Provide temporary lighting, as required.
7. Provide temporary heating and ventilation, as required.
8. Provide temporary water, as required.
9. Provide temporary telephone and internet, as required.
10. Coordinate shut-offs of any and all utilities with Owner at least 24 hours in advance.

11. Each individual Contractor to provide temporary utilities for all contractors, crews and trades under their control or within the scope of work for their contract.

1.3 DESCRIPTION

A. Temporary Electrical Power:

1. Contractor may need to provide portable electric generators until utility service is available.
2. Provide adequate electrical power centers, wiring and services for all tools, equipment and miscellaneous items.
3. Locate so that power is available at any point with no more than 100 foot extension.
4. If required, provide minimum 200 ampere volt service entrance for voltage required.
5. Provide weather-proof distribution boxes at power centers, minimum four 20-amp 120 volt grounded outlets, with ground fault circuit breaker protection. Additional circuits as required.
6. Provide equipment grounding continuity for entire system.
7. Individual contractors and users provide grounded UL approved extension cords from power center.
8. Contractor to provide power for any and all temporary field offices, architect's field office, storage and construction buildings.
9. Contractor to provide power for temporary lighting, heating, ventilation and air conditioning.
10. Contractor to provide power for pumping, welding and other special equipment or procedures.
11. Provide temporary covers or plates for any and all openings, electrical boxes, receptacles, etc. that may be open during construction or awaiting installation of final covers or plates.

B. Temporary Lighting:

1. Provide work lighting, safety lighting and security lighting.
2. Provide lighting for construction and storage areas.
3. Provide lighting for Owner's tours or access to site areas for review.
4. Lightings Levels:
 - a. General work lighting and safety lighting 5 foot candles.
 - b. Finishing and detail work 20 foot candles.
5. Periods of Service:
 - a. Work and safety lighting continuous during working hours.
 - b. Security lighting at all hours of darkness.
6. Replace lamps throughout, as required.
7. Provide temporary exit signs as required for phasing of work or relocation of exits and egress paths.

C. Temporary Heating and Ventilation:

1. Provide as required to protect work and products against dampness and cold.
2. Provide suitable ambient temperatures for installation and curing of materials.
3. Provide adequate ventilation for safe working environment in accord with health regulations.
4. Heat and ventilate temporary field offices and other storage and construction buildings.
5. Temperatures Required:
 - a. Minimum 40°F, 24 hours a day.
 - b. During working hours and 24 hours a day during concrete and masonry work: 50°F.

- c. During interior finish work, 24 hours a day, 7 days prior to placing finishes until substantial completion: 70°F.
 - 6. Ventilation required to prevent hazardous accumulation and harmful exposure of dusts, fumes, mists, vapors or gases.
 - 7. Ventilation required for curing installed materials, humidity dispersal and sanitary facilities.
 - 8. Gas for temporary heating shall be from portable tanks only, not the use of natural gas system.
 - 9. Building system may be used for temporary heat only with approval of Architect. Areas must be sufficiently cleaned so as not to cause damage to system from construction dust and dirt.
 - 10. New filters are to be installed prior to operation of system.
 - 11. Contractor to replace all filters with new in all temporary and permanently installed units during construction every two (2) weeks minimum, and more frequently during times and in areas of heavy demolition work. Maintain and install additional cloth filters over all return air outlets at all times.
 - 12. New filters must be replaced just prior to owner occupancy.
- D. Temporary Water:
- 1. Provide service standpipe, centrally located, with minimum of two (2) 3/4" hose bibbs.
 - 2. Discharge pressure: Minimum 20 psi.
 - 3. Individual contractors and users provide hoses from hose bibbs.
 - 4. Maintain adequate water volume for all purposes.
 - 5. Provide water for temporary sanitary facilities, field offices, storage buildings, and cleaning and construction operations.
 - 6. Obtain required certification from authorities.
 - 7. If offsite water is required, Contractor shall pay all costs of water and hauling.
 - 8. Provide temporary caps, valves, shut-offs, and spigots as required.
 - 9. Contractor is to coordinate supply of water to areas of building which are to remain in service.
 - 10. Running of hoses through portions of an existing building is not allowed without approval of Owner.
- E. Temporary Telephone and Internet:
- 1. Provide, maintain and pay for telephone service to Contractor's field offices throughout construction.
 - 2. Contractor's job site superintendent is required to have a cellular/mobile phone at all times during normal working hours.
 - 3. Use of cellular/mobile phones are allowed for temporary phone service.
 - 4. Use of Owner's lines is prohibited; phone or internet.
 - 5. If contractor desires internet or e-mail service for their use at the jobsite, the contractor shall be responsible to provide it, and shall bear all costs for its installation and use. Use of any Owner's wireless internet service is prohibited, without express permission.

1.4 REGULATORY AGENCY REQUIREMENTS

- A. Obtain and pay for permits as required by authorities.
- B. Obtain and pay for temporary easements as required across property other than Owners.
- C. Comply with applicable Federal, State, and Local Codes:
 - 1. Occupational Safety and Health Act of 1970, as amended.

- 2. National Electric Code.
- 3. National Electric Safety Code.
- D. Comply with Utility Regulations.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials may be new or used, adequate in capacity for the purpose intended, without creating unsafe conditions or violating codes.
- B. Comply with Electrical Basic Materials and Methods, Division 26:
 - 1. Temporary wiring shall include green equipment grounding conductor and all outlets shall be grounding type.
 - 2. Provide required facilities, including transformers, conductors, poles, conduits, raceways, breakers, fuses and switches.
 - 3. Provide vapor proof and explosion proof fixtures in applicable areas.
- C. Comply with Basic Mechanical Requirements, Division 23:
 - 1. Provide required facilities, including piping, valves, pumps, pressure regulators and tanks.
 - 2. Portable Heaters: Oil or gas fired with electric blower, not requiring vent from heated space.
 - 3. Salamanders shall not be used.

PART 3 - EXECUTION

3.1 GENERAL

- A. Comply with applicable sections of Division 23, Mechanical and Division 26, Electrical.
- B. Install work in neat and orderly manner, structurally sound.
- C. Locate services to avoid interference with traffic, work and storage areas, material handling equipment and cranes.
- D. Modify service as work progress requires.

3.2 INSTALLATION

- A. Electrical:
 - 1. Service and distribution may be overhead or underground.
 - 2. Locate lighting to provide full illumination of required areas.

3. Locate controls at entrance to each area.
4. Install security lighting throughout all areas.
5. Wire temporary heating equipment.
6. Do not run branch circuits on floor.

B. Heating and Ventilation:

1. Locate to provide equitable distribution as required.

C. Water:

1. Do not run piping on floor or ground.
2. Locate water outlets to provide service convenient to work.
3. Provide drip pan under hose bibbs within the building, connect to drain.
4. Provide insulation to prevent pipes from freezing.
5. Provide temporary pumps, tanks and compressors as necessary to maintain pressure.

3.3 REMOVAL

- A. Remove completely all temporary materials and equipment upon completion of construction or when no longer required.
- B. Clean and repair damage caused by temporary installation and restore to satisfactory condition per Owner and Architect.
- C. Immediately prior to completion of project, remove temporary lamps and install new lamps throughout.

END OF SECTION 01 51 00

SECTION 01 53 00 - TEMPORARY CONSTRUCTION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Temporary Structures:
 - a. Contractor's Field Offices.
 - b. Storage Trailers.
 - c. Enclosures.
 - d. Toilets.
 - e. Stairs, Ladders, Ramps, etc.
 - f. Temporary Fence.
 - g. Project Signage.
 - h. Parking Facilities.
2. Installation.
3. Removal and Cleanup.
4. Protection.

PART 2 - PRODUCTS

2.1 TEMPORARY STRUCTURES

A. Contractor's Field Offices:

1. Provided by General Contractor.
2. The Contractor's offices required for general use and project meetings.
3. Type Option: Portable typical trailer units.
4. Windows, operable, screened; provide view of construction.
5. Automatic heating to maintain min 70°F.
6. Furnish emergency first-aid equipment, ABC fire extinguisher, extra hard hats.
7. Furnishings: Provide desk, chairs, adequate drawings reference board, drawing racks, and filing cabinets as needed.
8. Security: Provide window and door locks so that each office can be made independently secure.
9. Thermometer: Install a new bulb type weather thermometer on outside of office, adjacent to window for inside reading. Do not install in direct sunlight.

B. Storage Trailers:

1. Provided by each General or Prime Contractor or subcontractor as required.
2. Coordinate location with Architect.
3. Remove at project completion and clean up area.

C. Enclosures:

1. Provided by each individual General or Prime Contractor.
2. Provide temporary weather-tight enclosures for all exterior openings.
3. Equip exterior doors with locks and closures.

D. Toilets:

1. Provided by each individual General or Prime Contractor.
2. Provide temporary sanitary facilities during construction period.
3. Enclose toilet facilities for construction personnel.
4. Portable units acceptable. No chemical toilets permitted.
5. Do not use toilets in existing or new building.

E. Stairs, Ladders, Ramps, etc.:

1. Provided by each individual General or Prime Contractor.
2. Provide temporary stairs, ladders, ramps runways, scaffolds, derricks, chutes and similar items required for proper execution of work by the trades.

F. Temporary Fence:

1. Provided by each individual General or Prime Contractor.
2. Chain link fence, 6'-0" high, minimum.
3. Provide fencing located as necessary to enclose the entire project construction limits, prior to work beginning. Provide with gates of sufficient size and quantity. Coordinate all locations and requirements with Architect and Owner's Representative.
4. Routing of fencing shall include all areas the Owner deems necessary to ensure the safety of the inhabitants of the site and the general public, as determined by construction operations on site.
5. Provide separate entrance gates for union and non-union personnel. Gates shall be clearly identified. Locate gates at opposite ends of the project site.

G. Project Signage:

1. Provided by each individual General or Prime Contractor.
2. Provide project identification sign of wood frame and exterior grade medium density overlay plywood construction, painted with lettering by professional sign painter, per Architect's design and colors. List title of project, Owner, Architect and Contractor. See drawings for detail, if applicable.
3. Signage of individual contractors or sub-contractors will be allowed only for identification of temporary offices and off site storage areas.
4. No other signage or advertisement will be allowed on the project site.

H. Parking Facilities:

1. General Contractor to provide temporary gravel surface parking areas to accommodate construction personnel.
2. Crushed Stone, #53 size.
3. Provide means of removing mud from vehicle wheels before entering streets.
4. When site space is not adequate, coordinate access to additional off-site parking.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Temporary Structures:

1. Locate as directed to avoid interference with work.
2. Relocate as required and as directed by Architect.
3. Construct with code-approved service connections.
4. Mount fire extinguishers in prominent accessible location.
5. Maintain offices during construction period.
6. Provide wooden steps and landing with handrail.
7. Provide crushed stone walkway.
8. Provide temporary concrete walks and pathways as indicated on temporary exiting plans. Locate, relocate, and coordinate as required to accommodate phasing of work, progress of work, code and fire officials, and concerns of Owner and Architect.

B. Temporary Enclosures:

1. Erect temporary doors as soon as enclosing walls are up.
2. Cover window or wall openings in advance of finishing operations when temporary heat is required.
3. Replace with permanent closures as soon as possible.
4. Install temporary partitions as required to control dust and moisture penetration into existing and completed spaces.
5. Provide temporary protection for installed products.
6. Provide temporary enclosures and fencing protection as indicated on temporary exiting plans. Locate, relocate, and coordinate as required to accommodate phasing of work, progress of work, code and fire officials, and concerns of Owner and Architect.

C. Temporary Toilets:

1. Locate as directed in convenient location to avoid interference with project.
2. Anchor portable units to prevent dislocation.
3. Service daily.
4. Relocate as work progresses.

D. Temporary Construction Apparatus:

1. Erect Scaffolding, securely in conformance with labor laws and safety codes.

E. Construct stairs, ladders, ramps, runways and derricks security to sustain 100 psf minimum live load or as required for their use.

3.2 REMOVAL AND CLEAN UP

A. Remove all temporary structures and materials completely upon completion of construction.

- B. Remove debris and clean area.
- C. Repair all damage and restore to finish condition.

3.3 PROTECTION

- A. Safety:
 - 1. Maintain lights and barricades on all obstruction and hazards during contract period in conformance to federal and local laws and codes.
- B. Fire Protection:
 - 1. Provide multi-purpose dry chemical extinguishers.
 - 2. Locate one extinguisher adjacent to each stairway.
 - 3. Wherever and whenever any burning, welding, cutting or soldering operations are in progress, or equipment is in use, or any work involving a fire hazard is performed, the Contractor or Subcontractor responsible for such operation shall have at all times acceptable fire extinguishers or protection within ten feet of the operation.
- C. Piping:
 - 1. Keep materials out of piping by capping or other protection.
 - 2. Trades responsible for stoppage shall bear expense of cleaning.
- D. Equipment:
 - 1. Each contractor and subcontractor shall take necessary precautions to protect and secure own equipment, tools and material.
- E. Surface Water Control:
 - 1. Grade site to drain properly at all times, without accumulation of water.
 - 2. Maintain excavations free of water. Pump excavation as required.
 - 3. Protect site from erosion. Do not allow erosion to leave site.

END OF SECTION 01 53 00

SECTION 01 62 00 - PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section Includes:
1. Contractor's options.
 2. Requests for substitutions.

1.2 CONTRACTOR'S OPTIONS

- A. For products specified only by referenced standards, select product meeting standards and submit for approval in accordance with this section.
- B. For products listing several manufacturers or model numbers, the following criteria apply:
1. For specification sections naming a list of acceptable manufacturers and only one manufacturer's specific model name or number, alternate products from the list of acceptable manufacturers are acceptable only if they are equivalent to the named, specific, model name or number in all respects. If the alternate manufacturer's product is not equivalent to the named, specific, model name or number in all respects, then that manufacturer's product is not an acceptable substitution, even though they are named as an acceptable manufacturer in the specification section. Proposed products from listed alternate manufacturers with no model name or model number listed must be submitted in accordance with this section.
 2. For specification sections naming a list of acceptable manufacturers, and no specific model number from any of the listed manufacturers is named in the specification, alternate products from named manufacturers are acceptable provided that they are equivalent to the listed performance criteria and referenced standards in all respects. If the alternate manufacturer's product is not equivalent to the listed performance criteria and referenced standards in all respects, then that manufacturer's product is not an acceptable substitution, even though they are named as an acceptable manufacturer in the specification section.
 3. For specification sections naming a list of acceptable manufacturers and a number of manufacturer's specific model numbers, any of the named, specific, referenced products as listed are acceptable. Alternate products from the listed acceptable manufacturers are acceptable only if they are equivalent to at least one of the named, specific, model names or numbers in all respects. If the alternate manufacturer's product is not equivalent to at least one of the named, specific, model names or numbers in all respects, then that manufacturer's product is not an acceptable substitution, even though they are named as an acceptable manufacturer in the specification section. Proposed products from listed alternate manufacturers without a listed model name or number must be submitted in accordance with this section.
- C. For products specified by naming only one product and manufacturer, there is no option, and no substitution will be allowed. This item may have been specified in this manner to standardize the Owner's maintenance procedures or stock inventory, comply with the Owner's warranty requirements, or to maintain compatibility with existing construction. In some instances, this item may have been specified to determine a level of

quality or performance desired and requests for substitutions may be accepted for consideration as determined by the Architect.

1.3 REQUESTS FOR SUBSTITUTIONS

- A. During period of bid preparation, Architect will consider written requests for substitutions, received at least ten (10) calendar days prior to bid date; requests received after that time will not be considered.
- B. Products proposed for installation by the Contractor and approved by the Architect shall not be changed except with written consent of the Architect.
- C. Submit all information to the Architect electronically via e-mail or CD, unless otherwise permitted. If hard copies are permitted, submit two (2) copies of all information.
- D. Include the following information in request. Submittals or product catalogs without the following specific information listed will not be considered.
 - 1. Complete data substantiating compliance of proposed substitution with Contract Documents.
 - 2. Product Data:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature;
 - 1) Product description.
 - 2) Performance and test data.
 - 3) Reference standards.
 - 4) Material safety and data sheets.
 - c. Samples.
 - d. Name and address of similar projects which may be visited in vicinity of project on which product was used and date of installation.
 - 3. Construction Method: detailed description and drawings of proposed method.
 - 4. Itemized comparison of proposed substitution with product or method specified.
 - 5. Data relating to changes in construction schedule.
 - 6. Relation to separate contracts.
 - 7. Accurate cost data on proposed substitution in comparison with product or method specified.
 - 8. Literature of item proposing to replace, proving equality and comparison.
- E. In making the request for substitution, Bidder/Contractor represents:
 - 1. They have investigated proposed product or method and determined that it is equal or superior in all respects to that specified.
 - 2. They will provide the same warranty requirements for substitution item as for product or method specified.
 - 3. They will coordinate and accommodate installation of accepted substitution into the work, making such changes as may be required for work to be complete in all respects and trades.
 - 4. The Bidder/Contractor waives all claims for any and all additional costs or time related to this substitution which consequently become apparent, by contractor, subcontractors, vendors, and suppliers. Bidder/Contractor shall be responsible for any and all costs, direct or indirect, resulting from this Request.
 - 5. Cost data is complete and includes all related costs under his Contract, but excludes:

- a. Costs under separate contracts.
- b. Architect's redesign costs, if any.

F. Substitutions will not be considered if (in the opinion of the Architect):

- 1. Request is not received within the proper timeframe for consideration prior to the bid date.
- 2. Request does not contain the proper information for determination of substitution.
- 3. Item has been specified with no substitutions permitted.
- 4. Item is not considered to be equal to that specified.
- 5. Item would require substantial revision to the Contract Documents or design intent.
- 6. Item would have an adverse effect on the project or construction schedule.
- 7. Item would have an adverse effect on other trades or scope of work.
- 8. Item is deemed unacceptable by the Owner for any reason.
- 9. Item is deemed not equal to the desired aesthetic or have an adverse aesthetic effect; including colors, textures, patterns or appearance specified or intended.
- 10. They are indicated or implied on shop drawings or project data submittal without formal request submitted in accordance with this Section.
- 11. They have not been included in an addendum during bidding.
- 12. They are made after award of Contract.

G. It is the responsibility of the bidder to make a complete and proper submission for their request for substitution, to the correct party as indicated in the specifications and within the required timeframe. The Architect is not responsible for any errors in the bidders submission, including such items as sending information to the incorrect contact person, or sending the request to the incorrect mailing address, fax number or e-mail address.

H. The decision of the Architect is FINAL.

END OF SECTION 01 62 00

SECTION 01 64 00 - OWNER-FURNISHED EQUIPMENT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Description of work.
2. Definitions.
3. Protection and Cleaning.
4. Building Systems.

1.2 DESCRIPTION OF WORK

- A. Coordinate the installation of the equipment or system with all trades. Any problem noted shall be brought to the attention of the Architect. This notification must be submitted in writing and no claims for additional work shall be considered unless the request for clarification has been initiated by the Contractor.
- B. Work includes installation of owner furnished items as noted on drawings and coordination of owner installed items with owner's representatives, and vendors and suppliers.

1.3 DEFINITIONS

A. OFCI: (Owner Furnished - Contractor Installed)

1. The Owner shall be responsible for furnishing equipment or system for installation by Contractor.
2. The Contractor shall be responsible for receiving, storing, protecting, providing all rough-in services, installing and testing of the equipment or system. The Contractor shall receive, inventory, verify quantity and condition and notify the Owner of any discrepancies or damage. The Contractor shall provide coordination, blocking, connections and all provisions necessary to fully incorporate into the project, scope, building and site.

B. CFCI: (Contractor Furnished - Contractor Installed)

1. The Contractor shall be responsible for ordering, receiving, storing, protecting, installing and testing of the equipment or system.
2. Unless otherwise noted, ALL work shown on drawings and specified is C.F.C.I.

C. OFOI: (Owner Furnished - Owner Installed)

1. The Owner shall be responsible for furnishing and installing this equipment or system.
2. The Contractor shall be required to furnish any rough-ins as shown on the Contract Documents, and cooperate with the Owner and their vendors to coordinate this work with work of the Contract.

1.4 PROTECTION & CLEANING

- A. Contractor shall protect and clean all O.F.C.I. items, treating them the same as if they had been purchased by the contractor.

1.5 BUILDING SYSTEMS

A. Voice/Data Network System:

- 1. Owner's Responsibility:
 - a. Will determine the type of system to be used.
 - b. Furnish and install system equipment complete.
 - c. Provide servers, computers, routers, racks, handsets, switches, etc.
 - d. Provide wall mounted rack and patch panels for contractor installation.
 - e. Provide, install and connect all wire and cable from patch panels to system equipment.
- 2. Contractor's Responsibility:
 - a. Install Owner Furnished wall mounted rack and patch panels.
 - b. Provide and install all cable supports, conduit, backboxes, junction boxes, backboards, power outlets, outlet devices and plates, ventilation, sleeves through walls and other items or work not specifically indicated.
 - c. Provide, install and connect all wire and cable from ultimate outlet locations to patch panels.
 - d. Complete final connections and testing and certification of those connections between ultimate outlet locations and patch panels.
 - e. See Electrical Drawings and Specifications for additional information and clarification.

B. Video Presentation and Communication System:

- 1. Owner's Responsibility:
 - a. Will determine the type of system to be used.
 - b. Furnish and install system equipment complete.
 - c. Provide, install and connect all wire and cable from ultimate outlet location to system equipment.
- 2. Contractor's Responsibility:
 - a. Provide and install all conduit, backboxes, junction boxes, power outlets, outlet devices and plates, sleeves through walls and other items or work not specifically indicated.
 - b. Provide and install wire from input to output location.
 - c. Coordinate with Owner's vendor/installer.
 - d. See Electrical Drawings and Specifications for additional information and clarification.

C. Building Intrusion Alert System:

- 1. Owner's Responsibility:
 - a. Will determine the type of system to be used.
 - b. Furnish and install system equipment complete.
 - c. Provide, install and connect all wire and cable complete.
- 2. Contractor's Responsibility:

- a. Provide and install all conduit, backboxes, junction boxes, power outlets, outlet devices and plates, sleeves through walls and other items or work not specifically indicated.
- b. Coordinate exact locations of backboxes in walls and ceilings prior to rough-in.
- c. Coordinate with Owner's vendor/installer.
- d. See Electrical Drawings and Specifications for additional information and clarification.

D. Electronic Door Access Control System:

- 1. Owner's Responsibility:
 - a. Will determine the type of system to be used.
 - b. Furnish and install system equipment complete.
 - c. Provide and install all wire and cable and connections between various equipment, door hardware and components and between these components and patch panel as required.
- 2. Contractor's Responsibility:
 - a. Provide and install door hardware and components as included in bid documents.
 - b. Provide and install all conduit, backboxes, junction boxes, power outlets, outlet devices and plates, sleeves through walls and other items or work not specifically indicated.
 - c. Coordinate exact locations of backboxes in walls and ceilings prior to rough-in.
 - d. Coordinate with Owner's vendor/installer.
 - e. See Electrical Drawings and Specifications for additional information and clarification.

E. Bank Equipment/Signage:

- 1. Owner's Responsibility:
 - a. Will determine the type of system/equipment to be used.
 - b. Furnish and install system equipment complete.
 - c. Make final connections of low voltage wiring to equipment.
- 2. Contractor's Responsibility:
 - a. Provide and install all conduit, backboxes, junction boxes, power outlets, outlet devices and plates, sleeves through walls and other items or work not specifically indicated.
 - b. Coordinate exact locations of backboxes in walls and ceilings prior to rough-in.
 - c. Coordinate with Owner's vendor/installer.
 - d. Make final connections of line voltage wiring to equipment.
 - e. See Electrical Drawings and Specifications for additional information and clarification.

F. All Other Items Indicated on Drawings as O.F.C.I.

- 1. Owner's Responsibility:
 - a. Will determine the type system to be used.
 - b. Deliver items to job site.
- 2. Contractor's Responsibility:
 - a. Provide coordination, blocking and install items.
 - b. Provide any and all connections and provisions necessary to fully incorporate into the project.

END OF SECTION 01 64 00

SECTION 01 65 00 - PRODUCT DELIVERY AND HANDLING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Material shipments and project delivery to job site.
2. Handling of materials and products included in project.
3. Phasing of the work.

1.2 DELIVERY

- A. Delivery 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 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 shipments designated for this project.
- E. Under no circumstances may shipments be directed to, or in care of, the Owner.

1.3 HANDLING

- A. All materials furnished under this Contract shall be identified, shipped, addressed, consigned, etc., to the Contractor who may be charged therewith by giving the name of the Contractor, the name of the project, the street and the city.

1.4 PHASING OF THE WORK

- A. Work may be phased, limiting installation of materials to separate areas of site or times of construction.
- B. Any and all coordination of materials on site related to phasing of the work shall be accomplished by the Contractor at no additional costs to the Owner.
- C. All materials, equipment, and associated items and components for the scope of work are to be delivered to the site only as and when needed for installation. Time allowed on site prior to installation shall be a reasonable timeframe as deemed acceptable by the Architect.
- D. All items on site shall be stored off the ground and protected by watertight encapsulating cover in preparation for immediate installation.

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- E. Any and all items on site in a timeframe deemed unacceptable by the Architect for any reason, or deemed to be damaged by improper handling or storage, are to be removed from the site and returned to the manufacturer, without cost to the Owner. Products shall be replaced entirely with new materials at the time needed and deemed acceptable for installation.

END OF SECTION 01 65 00

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Make several parts fit properly.
2. Uncover work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming with requirements of Contract Documents.
5. Remove samples of installed work as specified for testing.
6. Remove existing construction necessary to install new materials, equipment, mechanical or electrical items.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. For replacement of work removed: Comply with Specifications.**

PART 3 - EXECUTION

3.1 PREPARATION

A. General:

1. Do not endanger any other work by cutting or altering work or any part of it.
2. Do not cut or alter work of another contractor without the written consent of Architect.
3. Patching and refinishing shall be executed by the trade experienced in such finishing work.

B. Prior to cutting:

1. Provide shoring, bracing and support as required to maintain structural integrity of project.
2. Provide protection for other portions of project.
3. Provide protection from elements.
4. Advise Architect designating time work will be uncovered to provide for observation.

3.2 PERFORMANCE

- A. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation of repairs and new work.**

- B. Execute excavating and backfilling by methods which will prevent damage to other work and will prevent settlement.
- C. Execute fitting and adjustment of products to provide a finished installation to comply with specified tolerances, finishes.
- D. Cut existing concrete openings for piping, floor drains, etc., by core drilling.
- E. Cut existing walls, floors, ceilings, roofs, etc. necessary for the proper installation of new materials, equipment, mechanical or electrical items. Provide all necessary framing, lintels, hangers, etc. to maintain the structural integrity of the building system after cutting.
- F. Employ original installer to perform cutting and patching for exposed finished surfaces.
- G. Restore work which has been cut or removed; install new products to provide completed work in accord with requirements of Contract Documents.
- H. Contractor is responsible for cost to restore or patch adjacent surfaces to original condition.
- I. Fit work airtight to pipes, sleeves, ducts, conduits and other penetrations.
- J. Refinish entire surface as necessary to provide an even finish.
 - 1. Continuous surfaces: To nearest intersections.
 - 2. Assembly: Entire refinishing.

END OF SECTION 01 73 29

SECTION 01 74 23 - CLEANING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section Includes:
 - 1. Description of general cleaning requirements.
 - 2. Regulatory agency requirements.
 - 3. Cleaning during construction.
 - 4. Final Cleaning.

1.2 DESCRIPTION

- A. The General Contractor is responsible for all cleaning unless specifically noted otherwise.
- B. Maintain premises and public properties free from accumulations of waste, debris, and rubbish, caused by operations.
- C. Remove temporary piping and wiring: by respective contractors.
- D. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surface; leave project clean and ready for occupancy.

1.3 REGULATORY AGENCY REQUIREMENTS

- A. Maintain project in accord with Occupational Safety & Health Act of 1970 as amended, in terms of clean up.
- B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on project site.
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains, or bury below ground.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 CLEANING DURING CONSTRUCTION

- A. Execute cleaning to ensure that building, grounds and public properties are maintained free from accumulations of waste material and rubbish on a daily basis by all trades.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. At reasonable intervals during progress of Work, clean site and public properties, and dispose of waste materials, debris and rubbish.
- D. Provide on-site containers for collection of waste materials, debris and rubbish.
- E. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.
- F. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- G. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.
- H. Ensure that no construction materials or items are accessible to public on site or grounds.

3.2 FINAL CLEANING

- A. Employ experienced workman or professional cleaners for final cleaning.
- B. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.
- C. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from sight-exposed interior and exterior finished surfaces; polish surfaces so designated to shine finish.
- D. Wash and clean all glass, removing labels.
- E. Clean and polish fixtures, equipment and materials.
- F. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.
- G. Vacuum all carpeted areas; wax and polish all tile and resilient flooring areas.
- H. Remove all foreign materials from roof and site area.
- I. Broom clean paved surfaces; rake clean other surfaces of grounds.

- J. Each Prime Contractor shall be responsible for cleaning all equipment installed by the respective contractors.
- K. Mechanical and Electrical Work:
 - 1. Respective contractors shall perform cleaning of their equipment.
 - 2. Mechanical contractor shall clean all strainers in his respective piping work.
 - 3. Replace throw-away type air conditioning filters or media if units were operated during construction, or clean ducts, blowers and coils if air conditioning units were operated without filters.
 - 4. This does not include replacing filters used for performance testing and balancing.
 - 5. Replace burned out or inoperative pilot and lighting lamps; by contractor furnishing respective equipment or fixture.
 - 6. Replace all bulbs in fixtures used for temporary lighting during construction.
- L. Conduct final cleaning and preparation of surfaces and materials as per manufacturer's recommendation and in strict accordance with manufacturer's guidelines.
- M. All materials and finishes shall be stripped, waxed, polished, buffed, etc., upon Substantial Completion for their use by Owner.
- N. Owner will assume responsibility for cleaning as time designated on Certificate of Substantial Completion, Conditional Acceptance or partial occupancy, whichever is first, for Owner's acceptance of Project or portion thereof.

END OF SECTION 01 74 23

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Administrative procedures in closing out the work.
2. Procedures for Substantial Completion.
3. Procedures for Final Inspection.
4. Required contractor guarantees.
5. Evidence of payments and release of liens.
6. Final adjustment of accounts.
7. Final Application and Certificate for Payment.
8. Post construction inspection.
9. Closeout submittals required are specified in Section 01 78 00.
10. Closeout maintenance materials required are specified in Section 01 78 46.

1.2 SUBSTANTIAL COMPLETION

- A.** Submit written certification to Architect that project or designated portion of project is substantially complete and ready for use by Owner.
- B.** Architect will make an inspection within a reasonable time after receipt of such notice. The Contractor is responsible for the final punchlist inspection in accordance with the General Conditions. No inspection by the Architect will be made until the Contractor submits written certification that the punchlist has been issued and complete. The Architect's Substantial Completion inspection is not for the purpose of preparing a "to-do" list for the Contractor to use in finishing the work. If it becomes apparent at the time of the Substantial Completion inspection that items affecting life safety, accessibility, security, or full intended use of space are not complete, the inspection will be terminated and the Contractor will be liable for the costs of re-inspection.
- C.** Should Architect consider that work is not substantially complete:
1. Architect shall immediately notify Contractor, in writing, stating reasons.
 2. Contractor to remedy deficiencies and send second written notice of substantial completion to Architect.
 3. Architect will re-inspect Work.
 4. Contractor to pay costs of Architect's re-inspection.
- D.** When Architect/Engineer considers that work is substantially complete; Architect will prepare and issue a Certificate of Substantial Completion, AIA Document G704, complete with signatures of Owner and Contractor, accompanied by Contractor's list of items to be completed or corrected ("Punchlist") as verified and amended by the Architect. Retainage amounts will be adjusted per General Conditions and Supplementary General Conditions.

1.3 FINAL INSPECTION

- A. Contractor shall submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been completed and inspected in accordance with Contract Documents.
 - 3. Equipment and systems have been tested in presence of Owner's representative and are operational.
 - 4. Work is completed, and ready for final inspection.
 - 5. If any items from the Certificate of Substantial Completion Inspection are not completed, the final inspection will be terminated and the Contractor will be liable for the costs of re-inspection.
- B. Architect will make final inspection after receipt of certification.
- C. Should Architect consider that work is incomplete or defective:
 - 1. He shall promptly notify Contractor, in writing, stating reasons.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send second written notice to Architect/Engineer certifying that Work is complete.
 - 3. Architect will re-inspect Work.
 - 4. Contractor to pay costs of Architect's re-inspection.
 - 5. Final payment will not be released.
- D. When Architect finds that work is acceptable in accordance with Contract Documents, he shall request contractor to prepare Project Closeout Submittals in accordance with Section 01 78 00.

1.4 GUARANTEES

- A. 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 specifications.
- B. In case repairs become necessary, the Owner will give written notice to the Contractor to make same and in case of failure of the Contractor to commence such repairs within 30 days after such notice, the Owner may make the repairs either by its own employees or by independent contract and may thereupon recover from the Contractor and his Sureties the cost of the repairs so made together with the cost of supervision and inspection thereof. The Owner will have sixty (60) days after the expiration of said guarantee period in which to notify the Contractor of any such repairs necessary on the date of such expiration. The determination of the necessity for repairs shall rest entirely with the Architect whose decision upon the matter shall be final and obligatory upon the Contractor.
- C. The Guarantees herein stipulated shall extend to the whole body of the improvement and all its appurtenances.

1.5 EVIDENCE OF PAYMENTS AND RELEASE OF LIENS

- A. Contractor to execute and submit:
 - 1. Contractor's Affidavit of Payment of Debts and Claims (AIA Document G706).
 - 2. Contractor's Affidavit of Release of Liens (AIA Document G706A)
 - 3. Consent of Surety to Final Payment (AIA Document G707).
- B. All submittals shall be duly executed before delivery to Architect.

1.6 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit final statement of account to Architect.
- B. Statement shall reflect all adjustments:
 - 1. Original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Change Orders.
 - b. Cash Allowances
 - c. Contingency Allowance.
 - d. Unit Prices
 - e. Deductions for uncorrected work.
 - f. Penalties and Bonuses.
 - 3. Total Contract Sum, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- C. Architect will prepare final Change Order reflecting approved adjustments to Contract Sum not previously made by Change Orders or Allowance Adjustments.

1.7 FINAL APPLICATION AND CERTIFICATE FOR PAYMENT:

- A. Contractor shall submit final application in accordance with procedures and requirements of General and Supplementary Conditions prior to submission of Final Application and Certificate for Payment.
- B. Architect will review Final Application and issue Final Certificate in accordance with provisions of General Conditions.
- C. Should final completion be materially delayed through no fault of Contractor, Architect may issue a Semi-Final Certificate for Payment in accordance with provisions of General Conditions.

1.8 POST CONSTRUCTION INSPECTION

- A. Prior to expiration of one year from date of Substantial Completion, Architect may make visual inspection of Project in company with Owner and Contractor to determine whether correction of Work is required in accordance with provisions of General Conditions.
- B. For Guarantee beyond one year Architect may make inspections at request of Owner after notification to Contractor.
- C. Architect will promptly notify Contractor, in writing, of any observed deficiencies.
- D. Any/all corrections to work at that time to be at Contractor's expense.

END OF SECTION 01 77 00

SECTION 01 78 00 - CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Operation and Maintenance Manuals.
2. Product Warranties.
3. Project Record Documents (As-Built Drawings).
4. Spare-Parts.
5. Certificates of Inspection.
6. Keys and Keying Schedule.
7. Instruction of Owner's Personnel.
8. Certificate of Occupancy.
9. Certification of Asbestos and Lead-Based Paint.
10. Closeout maintenance materials required.

- B.** Unless specifically permitted by the Architect, the Contractor is to provide all items listed herein to the Owner via the Architect prior to the date of Substantial Completion.

1.2 OPERATION AND MAINTENANCE MANUALS

A. Submission Requirements:

1. Furnish Owner with all manual information electronically on thumb drive in PDF format.
2. Furnish Owner with two (2) sets of bound hard copy manuals.
3. Submit to Architect for review of information and forwarding to Owner for Owner's records.

B. Preparation:

1. Prepare data by personnel experienced in maintenance and operation of described products.
2. Obtain information directly from manufacturer of equipment or product.

C. Format:

1. Prepare organization of data in the format of an instructional manual.
2. Cover:
 - a. Identify manual with title OPERATION AND MAINTENANCE MANUAL.
 - b. Identify title of Project.
 - c. Identify subject matter of contents.
3. Organization:
 - a. Divide sections for each separate product and system, with description of product and major component parts of equipment.
 - b. For any hard copies required, provide tabbed dividers between each section.

4. Text:
 - a. Include all manufacturer's published data and product cutsheets.
 - b. For any hard copies required, provide on 20 pound paper.
 5. Drawings:
 - a. Provide applicable drawing files from manufacturer or Architect's drawing files as required. Contact Architect to obtain PDF drawing files as needed.
 - b. For any hard copies required, provide with reinforced punched binder tab. Bind in with text. Fold larger drawings to size of text pages.
 6. Binders (for any hard copies required):
 - a. Commercial quality, 8-1/2 x 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size.
 - b. When multiple binders are used, correlate data into related consistent groupings.
- D. Contents:
1. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect/Engineer, Subconsultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
 2. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
 3. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
 4. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
 5. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
 6. Warranties: Include a copy of each.
 7. Reports: Include a copy of all test reports, certificates, testing and balance data, etc.
- E. Manual for Materials and Finishes:
1. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured Products.
 2. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 3. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
 4. Additional Requirements: As specified in individual Product specification Sections.
 5. Provide a list of all materials and finishes with scanned photo files or actual samples of all products.
- F. Manual for Equipment and Systems:
1. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance

- curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
2. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
 3. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
 4. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 5. Include color coded wiring diagrams as installed.
 6. Provide servicing and lubrication schedule, and list of lubricants required.
 7. Include manufacturer's published operation and maintenance instructions.
 8. Include sequence of operation by controls manufacturer.
 9. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 10. Provide control diagrams by controls manufacturer as installed.
 11. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
 12. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 13. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
 14. Include test and balancing reports as specified in Section 23 05 93 - Testing, Adjusting and Balancing.
 15. Additional Requirements as specified in individual Product specification Sections.
 16. Provide a list of design data, settings, setpoints, etc., as applicable for equipment.

1.3 PRODUCT WARRANTIES

A. Submission Requirements:

1. Furnish Owner with all warranty information electronically on thumb drive in PDF format.
2. Furnish Owner with two (2) sets of bound hard copy warranties.
3. Submit to Architect for review of information and forwarding to Owner for Owner's records.

B. Preparation:

1. Gather Warranties required for specific Products or Work as specified in each individual Section.
2. Obtain information directly from responsible Subcontractor, supplier, and manufacturer of equipment or product within 10 days after completion of applicable item of Work.
3. Except for items put into use with Architect approval, leave date of beginning of time of warranty until the Date of Final Acceptance is determined.
4. Verify that documents are in proper form, are complete, contain full information, are notarized, and are fully executed and valid.
5. Co-execute submittals when required.
6. Retain warranties until time specified for submittal.

C. Format:

1. Prepare organization of data in the format of an instructional manual.
2. Cover:
 - a. Identify manual with title WARRANTIES.
 - b. Identify title of Project.
 - c. Identify subject matter of contents.
3. Organization:
 - a. Separate each warranty keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary.
 - b. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - c. For any hard copies required, provide tabbed dividers between each warranty.
4. Binders (for any hard copies required):
 - a. Commercial quality, 8-1/2 x 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size.
 - b. When multiple binders are used, correlate data into related consistent groupings.

D. Contents, Each Volume:

1. Table of Contents: Neatly typed, in sequence of Table of Contents of Project Manual, with each item identified with number and title of specification Section in which specified, and name of Product or Work item.

E. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Architects approval, submit documents within 10 days after acceptance.
2. Make other submittals within 10 days after Date of Final Completion, prior to final Application for Payment.
3. For items of Work for which acceptance is delayed beyond Date of Final Completion, submit within 10 days after acceptance.

1.4 PROJECT RECORD DRAWINGS ("AS-BUILTS")

A. Submission Requirements:

1. Furnish Owner with original record document prints.
2. Furnish Owner with one (1) additional hard copy set of record document prints.
3. Furnish Owner with all as-built information electronically on thumb drive in PDF format.
4. Submit to Architect for review of information and forwarding to Owner for Owner's records.

B. Project Record Documents required:

1. Marked-up copies of Contract Drawings.
2. Marked-up copies of Shop Drawings.
3. Marked-up copies of Specifications, addenda and Contract Modifications.
4. Marked-up Product Data submittals.
5. Field records for variable and concealed conditions.

6. Record information on Work that is recorded only schematically.
- C. Maintenance of Documents:
1. Store record documents in field office apart from Contract Documents used for construction. Do not permit Project Record Documents to be used for construction purposes. Maintain and protect record documents from damage in a clean, dry, legible condition. Make documents available at all times for inspection by Architect.
- D. Record Drawings:
1. During construction, maintain a set of black-line white-prints of Contract Drawings and Shop Drawings for Project Record Document purposes.
 - a. Mark these Drawings to indicate actual installation where installation varies from installation shown originally. Give particular attention to information on concealed elements which would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:
 - 1) Dimensional changes to Drawings.
 - 2) Revisions to details shown on Drawings.
 - 3) Depths of foundations below first floor.
 - 4) Locations and depths of underground utilities.
 - 5) Revisions to routing of piping and conduits.
 - 6) Revisions to electrical circuitry.
 - 7) Actual equipment locations.
 - 8) Duct size and routing.
 - 9) Locations of concealed internal utilities.
 - 10) Changes made by Contract Modification.
 - 11) Details not on original Contract Drawings.
 - b. Responsibility for Markup and Supervision: Contractor Quality Control Representative; as specified in Section 01 45 00 - Quality Control. Where feasible, individual or entity who obtained record data, whether individual or entity is installer, subcontractor, or similar entity, is required to prepare mark-up on Record Drawings.
 - 1) Accurately record information in an understandable Drawing technique.
 - 2) Record data as soon as possible after it has been obtained. In case of concealed installations, record and check mark-up prior to concealment.
 - 3) Contractor Quality Control Representative: Affix signature and certify accuracy of Record Drawings.
 - c. Mark completely and accurately record prints of Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.
 - d. Mark record sets with red erasable colored pencil; use other colors to distinguish between changes for different categories of Work at same location.
 - e. Mark important additional information which was either shown schematically or omitted from original Drawings.
 - f. Note construction change directive numbers, alternate numbers, Contract Modification numbers and similar identification.
 - g. At time of Final Acceptance, submit record Drawings to Architect for Owner records. Organize into sets, bind and label sets for Owner's continued use.

2. Copies and Distribution: Print one (1) black-line print of each Drawing, whether or not changes and additional information were recorded. Organize copies into manageable sets. Bind each set with durable paper cover sheets, with appropriate identification, including titles, dates and other information on cover sheets.
 - a. Organize and bind original marked-up set of prints that were maintained during construction in same manner.

E. Additional Record Submittals:

1. Refer to other specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Immediately prior to Final Acceptance, complete additional records and place in order, properly identified and bound or filed, ready for use and reference. Submit to Architect.
 - a. Categories of requirements resulting in miscellaneous records include, but are not limited to the following:
 - 1) Field records on excavations and foundations.
 - 2) Field records on underground construction and similar Work.
 - 3) Survey showing locations and elevations of underground lines.
 - 4) Inverted elevations of drainage piping.
 - 5) Survey establishing building lines and levels.
 - 6) Authorized measurements utilizing unit prices or allowances.
 - 7) Records of plant treatment.
 - 8) Ambient and substrate condition tests.
 - 9) Certifications received in lieu of labels on bulk products.
 - 10) Batch mixing and bulk delivery records.
 - 11) Testing and qualification of tradesmen.
 - 12) Documented qualification of installation firms.
 - 13) Load and performance testing.
 - 14) Inspections and certifications by governing authorities.
 - 15) Leakage and water-penetration tests.
 - 16) Fire resistance and flame spread test results.
 - 17) Final inspection and correction procedures.

1.5 SPARE-PARTS

- A. Provide Products, replacement stock, spare parts, maintenance, and extra materials in quantities specified in individual specification Sections.
- B. Deliver to Project Site and place in location as directed by Architect; obtain receipt prior to Final Payment.

1.6 CERTIFICATES OF INSPECTION

- A. General.
- B. Plumbing.
- C. HVAC.

- D. Electrical.

1.7 KEYS

- A. Submit keys and keying schedule to Owner.

1.8 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment, and maintenance of all products, equipment and systems.
- B. Such instructions shall occur at a time designated by the Architect/Engineer at the completion of the job at a meeting set up by the contractor and attended by the representatives of the Owner and manufacturer.
- C. Services of factory instructor or representative to teach Owner's representative on operation of equipment will be arranged by the contractor, shall begin after equipment has been placed in satisfactory operating condition and shall continue for a period of time as deemed necessary by the Architect.
- D. Contractor shall verify in writing that such periods of instruction have been held with the Owner's representative.
- E. Minimum length of training session to be two (2) hours.
- F. Session will need to be videotaped by Contractor for use by Owner.
- G. Notify Architect to attend all training sessions.

1.9 CERTIFICATE OF OCCUPANCY

- A. Where the Local Authority of Location of project requires either temporary or permanent Certificate of Occupancy, obtain and pay for Certificates and furnish a copy to the Architect for forwarding to the Owner.
- B. Contractor to verify requirements with Local Building Officials.

1.10 CERTIFICATION OF ASBESTOS MATERIAL AND LEAD-BASED PAINT

- A. The use of asbestos containing materials, in excess of 1 percent as defined by applicable US Environmental Protection Agency regulations, is prohibited in the project.
- B. The use of lead-based paint is prohibited in the project.
- C. Prepare and submit to the Architect the "Certification of Asbestos and Lead-Based Paint (Existing Building)" for existing buildings or portions of buildings (attached).
- D. Prepare and submit to Architect the "Certification of Asbestos and Lead-Based Paint (New Work)" for new material furnished or installed as part of the Work (attached).

PROJECT NO. 24-220.01
FHB - Buckman St. Branch - 2025 Renovations
First Harrison Bank

CLOSEOUT SUBMITTALS
01 78 00 - 8
04/30/2025

END OF SECTION 01 78 00

PROJECT NO. 24-220.01
FHB - Buckman St. Branch - 2025 Renovations
First Harrison Bank

CLOSEOUT SUBMITTALS
01 78 00 - 9
04/30/2025

Certificate of Asbestos and Lead-Based Paint
(New Work)

To: TowerPinkster
Subject: Certification for new construction
Facility name: _____

Facility address: _____

Certification for new construction:

This Contractor hereby certifies that no asbestos-containing material in excess of 1 percent as defined by applicable US Environmental Protection Agency regulations, and lead-based paint has been furnished or installed at the referenced project.

Contractor name: _____

Signature: _____

Address: _____

Telephone: _____

Date executed: _____

The penalty for making a false statement is prescribed by 18 USC 1001.

SECTION 01 78 46 - CLOSEOUT MAINTENANCE MATERIALS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Section Includes:

1. Maintenance Materials.
2. Owner Verification.

1.2 MAINTENANCE MATERIALS

A. General Requirements:

1. No maintenance stock to be used by the Contractor for any reason.
2. Provide maintenance stock for each and every style, type or color specified for each product.
3. Provide maintenance stock at end of the project and directly to the Owner.
4. Wrap and protect all materials for storage by the Owner.
5. Packages and containers to be manufacturer's unopened and unsealed packaging. If quantities listed exceed a manufacturer's single container, additional unopened and unsealed containers shall be supplied until minimum quantity is met.
6. Packages and containers shall include manufacturer's label and product information.
7. Paint products shall include manufacturer's color and mix formulas.

B. Porcelain Tile:

1. Provide to Owner maintenance stock of at least (12) floor tiles.
2. Provide to Owner maintenance stock of at least (12) wall tiles.

C. Acoustical Ceiling Tile:

1. Provide to Owner maintenance stock of at least (30) tiles.

D. Luxury Vinyl Tile Flooring:

1. Provide to Owner maintenance stock of at least (20) tiles.

E. Rubber Base:

1. Provide to Owner maintenance stock of at least (40) linear feet.

F. Modular Carpet Tiles:

1. Provide to Owner maintenance stock of at least (24) tiles.

G. Paint:

1. Provide to Owner maintenance stock of at least (2) unopened gallon containers.

H. Wall Covering:

1. Provide to Owner maintenance stock of at least (100) square feet.

I. Shingles:

1. Provide to Owner maintenance stock of at least (1) bundle.

1.3 OWNER VERIFICATION

A. Owner to sign-off receipt of each item.

- B. Provide to Architect, copy of this Specification Section with Owner's signature next to each item listed, verifying that they have been received by the Owner's representative and entered into their stock.

END OF SECTION 01 78 46

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section Includes:
1. Selective Demolition work included in project.
 2. Project demolition conditions.
 3. Electrical, Plumbing and HVAC Demolition.
 4. Utility demolition.
 5. Subsurface filling.
 6. Protection.

1.2 WORK INCLUDED

- A. The extent of demolition work shown on drawings and specified herein, including, but not limited to:
1. Opening of exterior walls for new doors, windows, grilles, louvers, mechanical, and electrical and providing weather-tight enclosures.
 2. Opening of interior walls, ceilings and floors necessary for proper installation of new materials, equipment, mechanical or electrical items.
 3. Removing interior walls, ceilings, floor finishes.
 4. Removing doors and frames.
 5. Removing casework and equipment.
 6. Removing existing HVAC system and components, both exposed to view and concealed.
 7. Removing existing plumbing fixtures, piping and components, both exposed to view and concealed.
 8. Removing existing lighting and electrical distribution, switches, outlets, conduit and other devices both exposed to view and concealed.
- B. Interior demolition includes complete wrecking of interior partitions, finishes and structures and removal and disposal of demolished materials, as shown on drawings and herein specified.
- C. The Owner shall have the option of retaining any item removed. The Contractor shall deliver these items to the Owner's designated storage area. Any items not retained by the Owner shall be disposed of offsite by the Contractor. All items are to remain property of the Owner unless specifically designated otherwise.
- D. Some removed items are to be salvaged for re-use. Drawings indicate extent of such work.

PART 2 - PRODUCTS

- A. Not Applicable

PART 3 - EXECUTION

3.1 PROJECT DEMOLITION CONDITIONS

A. Conditions of Structures:

1. The Owner assumes no responsibility for actual conditions of structures to be demolished.

B. Conditions of the structure existing at time of inspection for bidding purposes will be maintained by Owner in so far as possible. However, variations within structure may occur by Owner's removal and salvage operations prior to start of demolition work.

C. Pollution Controls:

1. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level.
2. Comply with governing regulations pertaining to environmental protection.

D. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

E. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to the start of work.

F. Partial Removal:

1. Items of salvable value to Contractor, and not retained by Owner, may be removed from structure as work progresses. Salvaged items must be transported from site as they are removed.
2. Storage or sale of removed items on site will not be permitted.
3. Store items noted on drawings and specified to be salvaged for use in the project, so as to prevent damage or deterioration.

G. Disposal of Demolished Materials:

1. Remove from site debris, rubbish, and other materials resulting from demolition operations.
2. Pay all fees related to removal and dumping.
3. Remove and dispose of interior demolition debris off job site.
4. Burning of removed materials from demolished structures will not be permitted.
5. Transport materials removed from demolished structures and dispose of off site.

H. Traffic:

1. Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, occupied areas, and other adjacent occupied or used facilities.
2. Do not close or obstruct streets, walks or other occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- 3.

I. Protections:

1. Ensure safe passage of persons around or through area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons. Provide protection in accordance with ANSI/NFPA 241.
2. Erect temporary covered passageways as required by the Owner or authorities having jurisdiction.

J. Use of explosives will not be permitted.

K. Provide temporary enclosures at doors and other penetrations in walls, necessitated by weather and demolition conditions, and where dust proof partitions are indicated. Enclosures shall be constructed with fire retardant treated lumber, insulated and painted. Joints shall be taped and caulked to prevent dust and debris from migrating beyond construction areas. Maintain enclosures in good repair and remove when no longer needed. Extend partitions to deck.

L. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.

M. Repair any damage to property which is to remain in use, or that of any person, or persons on or off site caused by the demolition work without additional expense to Owner.

N. Use of jackhammers during normal operating hours of the facility will not be permitted.

O. Where a portion of construction (walls, floors, ceilings, etc.) is indicated to be removed, demolition shall include the removal of any and all items either surface-mounted on it, or concealed within it, unless otherwise indicated to remain or be salvaged for reuse.

3.2 ELECTRICAL

A. Visit the site before submitting a bid to observe existing conditions.

B. Work in existing building shall be scheduled well in advance with the Owner. Work shall be performed at such times and under such conditions as suit the convenience of the Owner. Plan the Work to minimize disruption of normal operations.

C. Remove wiring devices, fixtures, components, electrical equipment, conductors, boxes and conduits not required to remain in service in remodeled areas when this Project is complete.

D. Reconnect circuits to other panelboards when necessary to complete the renovation.

E. Remove existing conduit and wire from areas to be remodeled, back to panelboard, cabinet or junction box. Where such Work would not be possible without disturbing areas not being renovated, consult with the Architect prior to performing the Work.

F. When outlets are covered up or are otherwise rendered inaccessible, all wiring shall be removed to the source. If a circuit that must remain in service is interrupted, it shall be reconnected by the most inconspicuous means so that it remains operational, with the same capacity as before. All building surfaces damaged, and openings left by removal of boxes, conduit, or other equipment shall be repaired. All holes left in junction boxes, switches, panels and other equipment shall be closed.

- G. Where new openings are cut and concealed conduits or other electrical items are encountered, they shall be removed or relocated as required. Where conduit to be removed stubs through floors, walls, and ceilings, such conduit shall be removed to the point where the finished surfaces can be patched so that no evidence of the former installation remains.
- H. Where a circuit is interrupted by removal of a device or fixture from that circuit, install wire and conduit as required to restore service to the remaining devices and fixtures on that circuit. If the interrupted piping is concealed in walls or under floors, an alternate route may be required.
- I. Lighting fixtures, wiring devices, panelboards, and conductors removed shall be offered to the Owner's Representative. If he chooses to retain these items or a part of these items, turn those chosen over to him. Items rejected by Owner's Representative shall be removed from the project site by the Contractor.

3.3 PLUMBING

- A. Visit the site before submitting a bid to observe existing conditions.
- B. Work in existing building shall be scheduled well in advance with the Owner. Work shall be performed at such times and under such conditions as suit the convenience of the Owner. Plan the Work to minimize disruption of normal operations.
- C. Remove piping, fixtures, components, valves, insulation and fittings not required to remain in service in remodeled areas when this Project is complete.
- D. Reconnect piping to provide service when required to complete the renovation.
- E. Remove existing piping from areas to be remodeled, back to service branch. Where such Work would not be possible without disturbing areas not being renovated, consult with the Architect prior to performing the Work.
- F. When outlets are covered up or are otherwise rendered inaccessible, all piping shall be removed to the source. If a fixture that must remain in service is interrupted, it shall be reconnected by the most inconspicuous means so that it remains operational, with the same capacity as before. All building surfaces damaged, and openings left by removal of fixtures, piping, or other equipment shall be repaired. All holes left shall be closed.
- G. Where new openings are cut and concealed piping or other plumbing items are encountered, they shall be removed or relocated as required. Where piping to be removed stubs through floors, walls, and ceilings, such piping shall be removed to the point where the finished surfaces can be patched so that no evidence of the former installation remains.
- H. Where piping is interrupted by removal of a piping or fixture, install piping as required to restore service to the remaining fixtures on that service line. If the interrupted circuit is concealed in walls or under floors, an alternate route may be required. If the interrupted piping is concealed in walls or under floors an alternate route may be required.
- I. Plumbing fixtures, valves, and gages removed shall be offered to the Owner's Representative. If he chooses to retain these items or a part of these items, turn those chosen over to him. Items rejected by Owner's Representative shall be removed from the project site by the contractor.

3.4 HVAC

- A. Visit the site before submitting a bid to observe existing conditions.
- B. Work in existing building shall be scheduled well in advance with the Owner. Work shall be performed at such times and under such conditions as suit the convenience of the Owner. Plan the Work to minimize disruption of normal operations.
- C. Remove piping, ductwork, equipment, components, valves, insulation, fittings and controls not required to remain in service in remodeled areas when this Project is complete.
- D. Reconnect piping and ductwork to provide service when required to complete the renovation.
- E. Remove existing piping and ductwork from areas to be remodeled, back to service branch. Where such Work would not be possible without disturbing areas not being renovated, consult with the Architect prior to performing the Work.
- F. When grilles and diffusers are covered up or are otherwise rendered inaccessible, all ductwork shall be removed to the source. If an HVAC equipment item which must remain in service is interrupted, it shall be reconnected by the most inconspicuous means so that it remains operational, with the same capacity as before. All building surfaces damaged, and openings, left by removal of grilles, piping, or other equipment shall be repaired. All holes left shall be closed.
- G. Where new openings are cut and concealed piping, ductwork, or other HVAC items are encountered, they shall be removed or relocated as required. Where piping, ductwork or controls to be removed stubs through floors, walls and ceilings, such items shall be removed to the point where the finished surfaces can be patched so that no evidence of the former installation remains.
- H. Where piping or ductwork is interrupted by removal of a branch or equipment, install material as required to restore service to the remaining items on that service line. If the interrupted piping or duct is concealed in walls or under floors, an alternate route may be required.
- I. HVAC equipment, valves, and gages removed shall be offered to the Owner's Representative. If he chooses to retain these items or part of these items, turn those chosen over to him. Items rejected by Owner's Representative shall be removed from the project site by the Contractor.
- J. Equipment removed from roof shall include curbs, sleepers, flashing boxes, etc. Install new roof decking to match existing. Install roof insulation and matching membrane system to maintain any roof warranties.
- K. Equipment removed from finished interior spaces shall include patching and restoration to match all adjacent finishes.
- L. All temperature controls shall be maintained, rerouted, reconnected, or reprogrammed to maintain operation of HVAC equipment.

3.5 UTILITY DEMOLITION

- A. Utility Services:
 - 1. Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
 - 2. Allow no interruption in service unless coordinated with Owner at least 72 hours in advance.
- B. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
- C. Disconnect and seal utilities serving each structure to be demolished, or interior area to be demolished, prior to start of demolition work.
- D. If utility service or other services to an occupied area (such as emergency power, heating, medical gas, air conditioning), are to be disconnected, provide temporary or alternative service to that area.
- E. Cap all utility lines terminated by the demolition work in a manner approved by the governmental authorities and utility companies having jurisdiction.
- F. Mark location of disconnected utilities. Identify and indicate capping location on project record documents.

3.6 SUBSURFACE FILLING

- A. Filling Basement and Voids:
 - 1. Completely fill below-grade areas and voids resulting from demolition of structures.
 - 2. Perform filled and compaction in accordance with requirements of Section 31 00 00 - Earthwork.

3.7 PROTECTION

- A. Provide temporary construction in accordance with requirements of Section 01 53 00 - Temporary Construction as required in all areas of demolition work.
- B. Provide levels of protection as deemed necessary by Owner for protection of public into space, project, and site.

END OF SECTION 02 41 19

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, material, equipment, special tools, supervision and services required to deliver and properly place and complete all cast-in-place concrete work, both plain and reinforced, indicated, noted and detailed on the drawings and specified herein, including (but not limited to) reinforcing steel, anchor bolts, forms, and form removal.
- B. 15 mil Vapor Barrier Systems throughout the project.

1.2 QUALITY ASSURANCE

- A. Comply with the following standards:
 - 1. ACI Standards (latest editions) for construction procedures. Including but not limited to:
 - a. Specifications for Structural Concrete for Buildings (ACI-301-05).
 - b. Recommended Practice for Hot Weather Concreting (ACI-305).
 - c. Recommended Practice for Cold Weather Concreting (ACI-306).
 - d. Building Code Requirements for Reinforced Concrete (ACI-318-02).
 - e. Guide To Evaluation of Strength Test Results Of Concrete (ACI-214).
 - f. ACI 302.2: Guide for Concrete Slabs that Receive Moisture-sensitive Flooring Materials.
 - 2. ASTM Standards (latest editions) for material specifications.
- B. Testing:
 - 1. See Section 01 45 00 - Quality Control.
 - 2. Pay costs of geotechnical engineer and testing laboratory approved by the Architect/Engineer, tests, inspections and necessary re-testing and re-inspection.
 - 3. Perform following tests, by certified concrete field technician.
 - a. Selection and securing of samples ASTM C172
 - b. Air content* ASTM C231 or ASTM C173
 - c. Slump test* ASTM C143
 - d. Cylinders - Five - 6" x 12" ASTM C31
 - e. Cylinder Test* ASTM C39 *Results to be reported by laboratory on test reports
 - 4. Concrete Cylinders:
 - a. Taken for each 50 cubic yards or each day's pour if less than 50 yards.
 - b. Remain undisturbed in a secure location on the site for 24 hours after which they shall be removed to the testing lab by laboratory personnel.
 - c. Two of the cylinders shall be tested at 7 days and two at 28 days for acceptance.
 - d. One cylinder shall be kept in reserve for 56-day test if needed.
 - e. Testing reports shall be made directly by laboratory as follows:

- 1) One copy to Architect
- 2) One copy to Contractor
- 3) One copy to Ready Mix Producer
- f. Failure of the concrete to meet the specification requirement's may result in its complete removal and replacement at the Contractor's expense.
- g. Cost of re-test, if any, will be at the Contractor's expense.

C. Test Failure:

1. In the event results do not meet the specification requirements, one or more of the following will be required at no cost to the Owner:
 - a. Windsor Probe test conforming to ASTM C803.
 - b. Core-boring test conforming to ASTM C42.
 - c. Load test in accordance with Chapter 20, ACI 318-05.
2. In event Windsor Probe, core-boring or load test indicates concrete does not conform to specifications, contractor shall take such measurements as Architect prescribes or remove defective work as directed by Architect.

D. Allowable Tolerances:

1. The surface plane tolerance for cast slabs shall be such that depressions between high spots are not greater than 1/8" under a 10 foot straight-edge.
2. Slabs on grade overall floor flatness and levelness minimums: $F_F = 35$ and $F_L = 25$.
3. Concrete floor tolerances shall be tested within 72 hours after floor installation.
4. Testing procedures shall comply with ASTM E1155 "Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers". An Independent Testing Laboratory shall be retained by the Contractor to provide floor tolerance testing.

E. Footings and Slabs On Grade:

1. All footing excavations shall be inspected by the geotechnical engineer and testing laboratory before concrete is placed. The adequacy of the soil shall be determined.
 2. Footings and slabs on grade shall bear on firm natural soil, or on properly compacted engineered fill over firm natural soil, as recommended by the geotechnical engineer.
- Engineered fill and backfill under all footings and slabs on grade shall be placed and compacted as recommended by the geotechnical engineer.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Store materials to prevent contamination, deterioration, and weather damage.
- B. Deliver ready-mixed concrete to destination in conformance with ASTM C94.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Cold Weather:

1. Comply with ACI 306.
2. Temperature of concrete when placed shall not be less than 50°F.
3. Maximum concrete temperature 90°F, minimum 50°F per ASTM C94, for duration of curing period.
4. Concrete shall be placed within 90 minutes of batch time.

B. Hot Weather:

1. Comply with ACI 305.
2. Temperature of concrete when placed shall not be greater than 90°F.
3. Maximum concrete temperature 90°F, for duration of curing period.
4. Concrete shall be placed within 90 minutes of batch time. Shorter time limits may apply when air temperature is in excess of 90°F.
5. Protect from rapid evaporation by spraying or sheeting.

- C. The Contractor shall consider the timing required for placement of concrete for the entire project. He shall include in his bid all work and costs associated with the proper protection, procedures and materials required for the weather and environmental conditions for the time of year the work is to occur. No additional costs will be borne by the Owner, Architect or their consultants for failure by the Contractor to include these costs in the bid or make reasonable assumptions as to the requirements needed or limitations that may be incurred.

1.5 SUBMITTALS

A. Concrete Mix Designs:

1. A separate mix design for each class and type of concrete is required.
 - a. Include literature for admixtures.
 - b. Include applicable compliance with referenced ASTM number.

B. Reinforcing Steel Shop Drawings:

1. Indicate all reinforcing steel sizes, locations, supports, details, lengths laps and bends.
2. Indicate all reinforcing strengths and quantities.

C. Vapor Barrier Product Data:

1. Submit manufacturer's published literature describing products and system.
2. Submit manufacturer's installation procedures and MSDS sheets.

D. Curing and Sealing Materials Product Data:

1. Submit manufacturer's published literature describing products.
2. Submit manufacturer's installation procedures and MSDS sheets.

PART 2 - PRODUCTS

2.1 MIX DESIGNS

- A. Design mix with appropriate adjustments for air content and aggregate proportions.
- B. Compressive Strength (minimum) reached by 28 days:
 - 1. 4,000 psi: All concrete for general use, interior and exterior, unless indicated otherwise.
 - 2. 3,500 psi: Curbing.
- C. Air Entrainment:
 - 1. For exterior concrete slabs exposed to weather: Controlled between 4%-6% by volume.
 - 2. **DO NOT USE** for interior concrete and site-cast tilt-walls.
 - 3. Comply with ASTM C260.
- D. Slump:
 - 1. Footings: 3 inches +/- 1 inch.
 - 2. Foundation walls: 4 inches +/- 1 inch.
 - 3. Interior slabs on grade and slabs over metal decking: 4 inches +/- 1 inch.
 - 4. Exterior slabs, pads, walks, steps and stoops: 4 inches +/- 1 inch.
 - 5. Curbs: 1 inches +/- .5 inch.
 - 6. When water reducing admixtures are used: 7.0 inches maximum.
- E. Water / Cement Ratio:
 - 1. Maximum water to cement ratio for all interior slabs (on grade or over metal decking) to be 0.50.
 - 2. Regardless of any contrary notes on Drawings, in no case shall the water to cement ratio exceed this amount for slabs scheduled to receive floor finishes. Provide admixtures as required for weather conditions at time of pour.
 - 3. If water to cement ratio exceeds this amount in quality control test, that area of slab must be removed at contractor's expense, the mix design corrected as required, and a new slab installed which complies with the proper water to cement ratio. All admixtures required are to be included in the corrected mix design submittal.
- F. Cement Content:
 - 1. Minimum cement content: 564 lb. per cu. yd., unless the supplier can substantiate with test data that a lower content is acceptable to achieve specified compressive strength per mix design.

2.2 CONCRETE MATERIALS

- A. Portland Cement:
 - 1. ASTM C150-05, Type 1.

2. One brand shall be used throughout the work.

B. Air Entraining Cement:

1. ASTM C150, Type IA or IIIA.

C. Aggregates:

1. ASTM C33:
2. Coarse Aggregates:
 - a. Clean, tough, durable fragments of crushed stone, uncrushed gravel or dredged river gravel free from dirt or objectionable matter.
 - b. Size: Maximum 1-1/2" at footings; 1" in slabs.
3. Fine aggregate: Natural sand; clean, sound, hard, durable particles; gradation size No. 1.

D. Water:

1. Clean, potable and free from injurious amounts of oil, acids, alkalies, organic matter or deleterious substances.

E. Fly Ash/Pozzolans:

1. ASTM C618.
2. Class F or C.
3. Content shall not exceed 20% by weight of the total cementitious content of the mix.
4. If used in conjunction with Ground Granulated Blast Furnace Slag, the total content of Fly Ash and Ground Granulated Blast Furnace Slag shall not exceed 50% by weight of the total cementitious content of the mix.

F. Ground Granulated Blast Furnace Slag:

1. ASTM C989.
2. Content shall not exceed 30-40% by weight of the total cementitious content of the mix.
3. If used in conjunction with Fly Ash, the total content of Fly Ash and Ground Granulated Blast Furnace Slag shall not exceed 50% by weight of the total cementitious content of the mix.

2.3 ADMIXTURES

A. Air Entraining Agent:

1. ASTM C260.
2. Neutralized vinsol resin solution.

B. Water Reducing Agent:

1. ASTM C494.
2. Types as required to provide controlled setting and/or controlled rate of hardening without increase in water/cement ratio or loss in strength.

C. Chemical Accelerators and Retarders:

1. ASTM C494.
2. Permitted only upon approval of Architect/Engineer.

D. Prohibited Admixtures:

1. Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are NOT permitted.

2.4 MIXING

- A. Measure and mix materials for ready mixed concrete in conformance with ASTM C94.
- B. Take into account free moisture in the aggregate weight.

2.5 CURING MATERIALS

A. Provide one of the following acceptable products:

1. "BASF/Sonneborn"; Kure-N-Seal WB.
2. "Foxfire International"; Foxfire P-1007 Sealer.
3. "Master Builders"; Masterseal.
4. "W.R. Grace"; Clear Seal.
5. "W.R. Meadows/Sealtight";, VOCOMP-20.
6. "The Euclid Chemical Company"; Super Diamond Clear VOX.

- B. Liquid Membrane: AASHTO M-148 and ASTM C309, Type 1, class A and B.
- C. Waterborne acrylic polymer in a co-solvent emulsion, transparent, quick drying, non-yellowing.
- D. Compatible with flooring adhesives.

2.6 METAL REINFORCEMENT

- A. Bars: ASTM A 615 Grade 60, Type "S", deformed.
- B. Deformation: ASTM A305.
- C. Stirrups and Column Ties: ASTM A 615 Grade 60.
- D. All Other Reinforcement: ASTM A 615 Grade 60, with supplementary requirements (S1).
- E. Welded Wire Reinforcement (WWR), Welded Wire Fabric (WWF), Welded Wire Mesh (WWM):
 1. ASTM A 185.
 2. 6 x 6 W1.4 x W1.4, or as otherwise indicated.

3. All splices shall be Class B tension lap splice.

F. Metal Accessories:

1. Including spacers, chairs, ties and other devices necessary for properly assembling, placing, spacing and supporting all reinforcement in place shall be provided.
2. Ties shall be of such type as to leave no metal closer than 3/4" from concrete surface.

2.7 VAPOR BARRIER

A. Provide one of the following acceptable products:

- a. "Stego Industries"; Stego Wrap.
- b. "Reef Industries"; Vapor Guard.
- c. "Viper"; VaporCheck II.
- d. W.R. Meadows"; Perminator.
- e. "Raven Industries"; Vaporblock VBLP15.

B. 15 mil polyethylene or polyolefin film slab underlay system.

C. System shall be comprised of manufacturer's tested assembly of vapor barrier film, seaming tape and penetration sealer tape, sealant or mastic.

D. Shall meet the following minimum requirements:

1. Classification: Class A per ASTM E1745-11.
2. Tensile Strength: 70 lbs/in per ASTM E154 / ASTM D882.
3. Puncture Resistance: 2,200 grams per ASTM D1709.
4. Permeance: Shall not exceed .01 perms as tested after conditioning per ASTM E154. (as per the definition of a vapor barrier in lieu of a vapor retarder).

2.8 EXPANSION JOINT FILLER

A. Provide one of the following acceptable products:

1. "BASF/Sonneborn"; Expansion-Joint Filler.
2. "W.R. Meadows/Sealtight"; Fibre Expansion Joint.

B. Pre-molded joint filler strips of resilient, flexible, closed cell, compressible, re-expanding, non-extruding material backing for sealants.

2.9 NON-SHRINK GROUT

A. Provide one of the following acceptable products:

1. "Euclid Chemical Co.", NS Grout.
2. "BASF", Masterflow 713.

- B. Pre-mixed, factory-packaged, non-staining, non-shrink, non-metallic, non-gassing mortar grouting compound.
- C. ASTM C827, C191, C109, and C1107.
- D. Minimum compressive strength: 5,000 psi
- E. Provide test data that grout when placed at a fluid consistency shall achieve 95% bearing under a 4' x 4' base plate.

2.10 BONDING AND REPAIR MATERIALS

- A. Bonding Compounds:
 - 1. Polyvinyl acetate type.
 - 2. Provide one of the following acceptable products - Rewettable: (Use only in areas not subject to moisture):
 - a. "Euclid Chemical Co."; Euco Weld.
 - b. "Larsen Co."; Weldcrete.
 - 3. Provide one of the following acceptable products - Non-rewettable polymer modified compound:
 - a. "Euclid Chemical Co."; Euco-Bond.
- B. Epoxy Adhesive:
 - 1. Two component, 100% solids, 100% reactive compound.
 - 2. Suitable for use on dry or damp surfaces.
 - 3. Provide one of the following acceptable products:
 - a. "Euclid Chemical Co."; Euco Epoxy No. 452MV.
 - b. "Euclid Chemical Co."; Euco Epoxy No. 620.
 - c. "Silka Chemical Corp."; Sikadure Hi-Mod.

2.11 FORM WORK

- A. Provide formwork to conform to shape, lines and dimensions of members indicated on Drawings.
- B. Construct formwork sufficiently tight to prevent leakage.
- C. Construct formwork for exposed smooth surfaces of plywood or other similar smooth material.
- D. Bevel exposed concrete corners 3/4 inch unless otherwise indicated on drawings.
- E. Form Coatings:
 - 1. Approved commercial formulation of proven performance that will not bond with concrete surfaces.
 - 2. Shall not impair subsequent treatment and curing of, or otherwise adversely affect, concrete surfaces.
 - 3. Non-staining.

4. Apply before reinforcing steel is placed.

F. Tolerances:

1. ACI 347.

2.12 DRAINAGE FILL / GRANULAR FILL BELOW SLABS-ON-GRADE

A. See Section 31 00 00 – Earthwork.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prior to placement of any permanent concrete, footings, slabs or other construction, remove all existing surficial fill, topsoil, organic material, wet soil, loose soil, undesirable soils, abandoned concrete and other materials to the extent indicated by the geotechnical engineer.
- B. Prior to placing concrete, notify all trades to be certain that all sleeves, conduit, chases, etc. are installed and properly located. . Coordinate all openings and chases required in the concrete work and provide all items to be cast into the concrete pour.
- C. Ensure slab subgrade is well drained, of adequate, uniform load bearing nature, and not muddy, soft or frozen.
- D. Dampen subgrade ahead of concreting.
- E. Test Below-slab pipes prior to casting concrete.
- F. Footing excavations shall be drained and firm at time of concrete placement.
- G. Vapor Barrier:
 - 1. Shall be properly installed and ready to receive concrete.
 - 2. Damp proof slab on grade with film underlay between fill and concrete.
- H. Verify reinforcement and anchors, expansion joint material and embedded items are secured in position. Install anchor rods, dovetail slots and other embedded items as required for support of other work that is attached to or supported by cast-in-place concrete.
- I. Joints in Work:
 - 1. Slabs and footings shall have no horizontal joints.
 - 2. Any stop in concrete work shall be made with keyed vertical bulkheads.
 - 3. All reinforcing shall continue through the joint.

- J. The Architect or his representative shall be given 24 hours notice to inspect placement of reinforcing steel before concrete is placed.
- K. Coordination With Floor Finishes:
 - 1. Contractor is responsible for determining maximum floor moisture levels and ph levels acceptable to floor finish manufacturers and installers.
 - 2. Schedule concrete floor slab pours to allow adequate time for moisture to evaporate prior to installing finish flooring.
 - 3. Provide concrete with a maximum water to cement ratio of 0.50.
 - 4. Allow minimum 3 months curing time before installing floor finish materials.
 - 5. Do not densify surfaces of slabs to receive moisture sensitive floor finishes to the point that the slab cannot dry to the surface.

3.2 VAPOR BARRIER

- A. Vapor Barrier:
 - 1. Install the entire system in accordance with ASTM E1643-Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
 - 2. Unroll vapor barrier film over entire area of aggregate or compacted earth base as indicated.
 - 3. Smooth all surfaces and keep clean and free of debris, contamination, tears or damage.
 - 4. Overlap all seams, ends and edges a minimum of 6" in direction of pour.
 - 5. Seal all seams using manufacturer's sealing tape, sealant or mastic.
 - 6. Seal all penetrations through film using manufacturer's sealing tape, sealant or mastic, or a combination as required to fully seal around all penetrating items.
 - 7. Correct any damages or tears in film materials and seam systems to protect integrity of system.
 - 8. Provide temporary overlayments as required to protect vapor barrier during slab installation.

3.3 REINFORCEMENT

- A. Provide bar supports and spacers in accordance with ACI Detailing Manual.
 - 1. All bar supports in areas where concrete will be exposed shall have plastic feet.
 - 2. Precast concrete blocks, 3"x3"x3", 3000 psi, shall be used to support reinforcing off the ground.
 - 3. At all other locations, chairs or standees shall be used.
- B. Detailing, fabrication and placing of reinforcing shall conform to applicable provisions of ACI 315 and ACI 318.
- C. Spread bars around small openings and sleeves in slabs and walls where possible and where bar spacing will not exceed 1-1/2 times the normal bar spacing.
- D. Discontinue bars at large openings where necessary and provide an area of reinforcement equal to the interrupted reinforcement distributing 1/2 of this reinforcement each side of the opening (Class B tension lap splice).

- E. Holes larger than 12 inches in any direction shall have (1) #5 x 5'-0" long diagonal bar in both faces at each corner, whether indicated, detailed or not.
- F. Pier reinforcement shall be doweled to the footing. Provide dowels equal in size, number and grade to the pier reinforcement, unless otherwise indicated.
 - 1. Dowels shall be hooked 90 degrees at the bottom level of footing reinforcement.
 - 2. Dowels shall be lapped with the pier reinforcement.
- G. Pier reinforcement shall be the same size, number and grade as the column/pilaster reinforcing, unless otherwise indicated.
- H. Reinforcing bars and welded wire fabric or mesh shall be placed and secured prior to pouring concrete.
- I. Minimum concrete protection for steel reinforcement:
 - 1. 3/4" for elevated slabs and walls not exposed to earth or weather.
 - 2. 1-1/2" for walls exposed to weather.
 - 3. 3" for footings and other concrete cast against earth.
 - 4. Comply with ACI 318 and 301 requirements for minimum concrete cover for reinforcement.

3.4 CONVEYING AND DEPOSITING

- A. Concrete for footings shall be placed the same day excavations are opened. If this is not possible, steps shall be taken to properly and adequately protect the excavation and maintain its integrity and levels of acceptability.
- B. Convey concrete from mixer to form as rapidly as practicable, by methods which will prevent segregation or loss of materials.
- C. Vertical drops: maximum three feet free fall.
- D. Place concrete as nearly as possible to its final position at a rate so it remains plastic and flows readily into position. Proceed with placing as a continuous operation until unit of construction is complete. Use vertical construction joints to avoid horizontal joints between concrete placements.
- E. Do not use retempered concrete or concrete partially hardened or contaminated with foreign material.
- F. Ensure forms and conveyance equipment are clean and free of ice, water, debris and hardened concrete.
- G. All vertical concrete surfaces shall be formed, including all footings.
- H. Provide shear keys in the top of all wall and column footings at concrete walls.
- I. Minimum depth for all footings for exterior walls to be 24" below finish grade.
- J. No water may be added to any concrete.

3.5 **CURING**

- A. Formwork shall remain in place five (5) days before being removed. Remove all formwork in such a manner and at such time as to not damage concrete surfaces and to ensure complete safety to the structure.
- B. Perform curing of concrete of slabs and other horizontal surfaces by moist curing or by use of curing compounds.
- C. Moist Curing: Moist curing shall be performed by application of polyethylene sheeting per ASTM C171 or continuous wetting of burlap or other type of absorptive cover or mat. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers. Cure for seven days.
- D. Curing Compounds:
 - 1. Apply curing compound immediately following completion of finishing after water sheen has disappeared.
 - 2. Spray or brush uniformly in a single coat immediately after final finishing operation, at rate recommended by manufacturer.
 - 3. Do not use material which discolors concrete or inhibits adherence of other materials.
- E. Meet requirements of hot and cold weather concreting.
- F. For slabs to receive moisture sensitive floor coverings, cure in accordance with recommendations of ACI 302.2.
- G. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.
- H. Do NOT use membrane curing compounds on surfaces which are to receive coatings applied directly to concrete surfaces (liquid floor hardeners, waterproofing, dampproofing, membrane roofing, flooring, concrete coatings, painting, staining, etc.) unless specifically permitted by the Architect, and written documentation is provided by the coating manufacturer that such compound will not have an adverse effect on adhesion, longevity, durability, performance, or any other issue of the product.

3.6 **COLD WEATHER REQUIREMENTS**

- A. Temperature of concrete when placed shall be not less than 50° F.
- B. Temperature of concrete shall be maintained above 50° F and below 90° F for duration of curing period
- C. Procedures shall be in accordance with ACI 306. Concrete shall be placed within 90 minutes of batch time.

3.7 **HOT WEATHER REQUIREMENTS**

- A. Temperature of concrete when placed shall be less than 90° F.
- B. Concrete shall be placed within 90 minutes of batch time. Shorter time limits may apply when air temperature is in excess of 90° F.

- C. Procedures shall be in accordance with ACI 305.

3.8 CONSOLIDATION

- A. Consolidate concrete with high-frequency vibrators.
- B. Insert vibrators into each 18" lift at intervals not to exceed 12". Insert for sufficient duration to produce complete consolidation without over-vibrating to cause separation.
- C. Remove excess free water collecting on the surface during the vibration before finishing.

3.9 JOINTS

- A. Locate and construct all joints as shown on the Drawings, or if not shown, as specified herein, or if not specified, as directed by Architect.
- B. Construction Joints.
 - 1. May be substituted for control or contraction joints in slabs on grade at the indicated locations of such joints or as approved by the Architect.
 - 2. Provide keyed joints between all cast sections of slabs on grade.
- C. Control Joints:
 - 1. Depth: 1/3 thickness of slab or 1" minimum depth, whichever is greater.
 - 2. Width: Maximum 3/16".
 - 3. Spacing:
 - a. Slabs:
 - 1) 4" slab = 12'-0" o.c. maximum.
 - 2) 5" slab = 13'-0" o.c. maximum.
 - 3) 6" slab = 14'-0" o.c. maximum.
 - 4) At greater frequency and other locations as indicated on Drawings.
 - b. Walks:
 - 1) 4'-0" o.c. or the width of the walk whichever is less.
 - 2) At greater frequency and other locations and patterns as indicated on Drawings.
 - c. Walls:
 - 1) At 20'-0" o.c. each way, maximum.
 - 2) At greater frequency and other locations as indicated on Drawings.
 - 4. Wet cut joints immediately after concrete set and able to support machine and personnel. Maximum 24 hours after placing.
 - 5. Saw cut joints are not acceptable unless authorized in writing by Architect. If permitted, joints shall be made using the early entry dry-cut method.
 - 6. For control joints scheduled to receive joint fillers, comply with joint filler manufacturer's recommendations for depth and preparation of joint.
- D. Expansion Joints: Install 1/2" expansion joint filler at concrete pavement joints; hold down below surface or cut the required depth for sealant.

- E. Carry reinforcement across joints in slabs except at expansion joints.

3.10 FINISHING: CONCRETE FINISH SCHEDULE

- A. Interior:
 - 1. Hard trowel smooth finish.
- B. Exterior:
 - 1. Stoops: Hard trowel smooth finish.
 - 2. Walks: Broom finish. (Hard trowel smooth at expansion and control joints).
 - 3. Steps: Vertical surfaces rubbed; horizontal surfaces broom finish.
- C. Broom finish by drawing broom across surface, transversely after hard troweling (not just floating).

3.11 BOLLARD CAP

- A. After filling pipe bollard with concrete, install precast bollard cap while concrete is still wet.

3.12 PROTECTION

- A. Protect fresh concrete from heavy rains, extreme air temperatures, injurious sun, mechanical injury and other deleterious elements.
- B. If scaling occurs from failure to take protective precautions, repair or replace damaged concrete.

3.13 PATCHING

- A. Do not patch any surface until examination is made by the Architect and permission is given.

PART 4 - SUBMITTAL CHECK LIST

- A. Concrete Mix Designs.
- B. Reinforcement Steel Shop Drawings.
- C. Vapor Barrier Product Data.
- D. Curing and Sealing Materials Data.

END OF SECTION 03 30 00

SECTION 04 01 00 - MASONRY PROTECTION AND CLEANING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to protect masonry materials and masonry work and to complete the cleaning of masonry work.

1.2 DELIVERY, STORAGE AND HANDLING

- A. Store masonry and mortar materials in a high, dry location and in such a manner as to prevent absorption of moisture from the ground.
 - 1. Cover materials completely with waterproof covering securely tied or weighted in place.
 - 2. Store accessory items to prevent damage from construction operations and elements.

1.3 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Manufacturer's data sheets, cutsheets and materials description.

PART 2 - PRODUCTS

2.1 CLEANING COMPOUND

- A. Provide one of the following approved products (as applicable to specific project conditions):
 - 1. Brick, Concrete Block, Tile:
 - a. "ProSoCo", Sure Klean #600.
 - b. "ProSoCo", Sure Klean #101 Lime Solvent (Red and Dark Colored Brick and Surfaces).
 - c. "ProSoCo", Sure Klean #800 Stain Remover (Buff or White Brick).
 - d. "ProSoCo", Enviro Klean Safety Klean.
 - e. "Sonneborn", Sonokleen 88.
 - f. "EaCo Chem", NMD 80.
 - 2. Pre-Cast Concrete, Poured-In-Place Concrete:
 - a. "ProSoCo", Sure Klean #600.
 - b. "ProSoCo", Sure Klean Light Duty Concrete Cleaner.
 - c. "ProSoCo", Sure Klean Heavy Duty Concrete Cleaner.
 - d. "ProSoCo", Enviro Klean Safety Klean.
 - e. "EaCo Chem", NMD 80.

3. Limestone, Natural Stone, Non-Cementitious Manufactured or Synthetic Stones:
 - a. "ProSoCo", Sure Klean #800 Stain Remover.
 - b. "EaCo Chem", NMD 80 (not permitted for polished stone).

2.2 MATERIALS

- A. Use cleaning product especially formulated for cleaning the particular masonry materials involved.
 1. Use only non-staining and non-corrosive products.

PART 3 - EXECUTION

3.1 PROTECTION

- A. When masonry work has been stopped for the day, courses shall be leveled and all joints, other than required cavities, shall be well filled with mortar.
- B. Protect masonry in place from rain with waterproof coverings securely fastened in place, until roof coverings, copings, flashing, or other permanent protection of the top of walls is in place.
- C. Protect all masonry protections from damage by use of wood covers or protective barricades.

3.2 COLD-WEATHER PROTECTION

- A. When ambient temperature is below 40°F the temperature of the masonry when laid shall not be less than 40°F.
 1. Thaw frozen sand before use. Do not scorch.
 2. The temperature of the mixed mortar to be at least 70°F but not more than 120°F.
 3. Do not exceed a mixing water temperature of 160°F.
 4. Do not use admixtures or anti-freeze compounds for the purpose of reducing the freezing temperature of mortar.
- B. When the ambient temperature is below 20°F, heat masonry units to 40°F. Maintain a temperature of at least 40°F on both sides of the wall for not less than 48 hours.

3.3 HOT WEATHER PROTECTION

- A. In hot dry weather, wet the mortar board and cover mortar to retard the drying out of the mortar.
- B. When the ambient temperature is above 80°F, mortar which dries too rapidly may be retempered with the addition of small quantities of water. Discard mortar if more than 2 hours after mixing.

3.4 CLEANING

- A. After all masonry work is completed, repair and point all defective work to the Architect's approval.
 - 1. Clean all exposed new work with masonry cleaning products used in accordance with the manufacturer's printed instructions.
 - 2. Protect all sash and other corrodible materials.

PART 4 - SUBMITTAL CHECK LIST

- A. Manufacturer's Literature.

END OF SECTION 04 01 00

SECTION 04 05 13 - MORTAR

PART 1 - PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to provide and complete all mortar for setting of all masonry work on this Project as indicated, noted, detailed and scheduled on the drawings and specified herein.

1.2 REFERENCES

- A. Publications of the following Institutes, Associates, Societies and Agencies are referred to in this section:
 - 1. American Society for Testing and Materials (ASTM).

1.3 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Materials description of cement.
 - 2. Manufacturer's test data for mortar mixtures.
- B. Samples:
 - 1. Manufacturer's actual sample bars of entire selection of standard mortar colors.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver mortar materials, except sand, in full, unopened bags.
 - 1. Store packaged materials off the ground and keep covered and protected from weather until used.
- B. Deliver and stockpile sand in vicinity of the approved batch mixing location.
- C. Pre-mixed sand/mortar, silo type batch plants may be used on site.
- D. Use pipe or hose to provide clean fresh water at the batch mixing location.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Masonry Cement:

1. Provide one of the following approved products:
 - a. "Essroc", Brixment.
 - b. "Cemex", Kosmortar.
 - c. "Lafarge", Masonry Cement.
 2. Masonry Cement shall comply with the requirements of ASTM C91.
 3. Portland Cement, Type 1, shall comply with the requirements of ASTM C150.
- B. Hydrated Lime:
1. To comply with the requirements of ASTM C207.
- C. Aggregates to Setting Mortar:
1. Shall comply with the requirements of ASTM C144.
 2. For joints 1/4 inch thick or less, 100% shall pass No. 8 sieve and 95% shall pass No. 16 sieve.
- D. Water:
1. Clean, fresh and potable.
 2. Free from injurious amounts of oils, acids, alkalies, organic matter or deleterious substances.
- E. Water Repellent:
1. Provide one of the following approved products:
 - a. "Grace Construction Products"; Dry-Block.
 - b. "BASF"; Rheopel Plus.
 - c. "ACM"; RainBloc.
 - d. "Krete"; HQ.
 2. Use for all mortar on exterior concrete masonry walls.
- F. Silo Batch Plant:
1. As approved by the Architect.

2.2 MIXES

- A. Mortar Mixes:
1. All components to be pre-measured, pre-packaged and pre-mixed by the manufacturer.
 2. Ready-mixed mortar, prepared offsite and delivered for storage in tubs, will NOT be acceptable.
- B. Type S Mortar:
1. 1,800 psi minimum, high compressive strength tested in accordance with ASTM C270.
 2. For use at all exterior masonry walls.
 3. For use at all at grade and below grade masonry walls.
 4. For use at all interior, reinforced masonry walls.

- C. Type N Mortar:
 - 1. 750 psi minimum, medium compressive strength tested in accordance with ASTM C270.
 - 2. For use at all interior, non-reinforced masonry walls.
 - 3. For use at all exterior veneers, brick and stone.
- D. No chemical admixtures shall be added to the mortar without the express permission of the Architect.
- E. Mortar Color:
 - 1. Standard natural mortar, uncolored.
 - a. For use at CMU not exposed to view or scheduled to be painted.
 - 2. Tinted, colored mortar.
 - a. For use at brick veneer.
 - b. Color as selected by Architect from manufacturer's entire standard selection to match existing brick veneer mortar.

PART 3 - EXECUTION

3.1 MIXING

- A. Mix mortar mix and water proportions by volume per manufacturer's requirements.
- B. Mix mortar in an approved drum type batch mixer to a uniform color, texture and consistency.
 - 1. Measure ingredients carefully and completely empty drum between batches.
 - 2. Hand mixing will not be permitted.
- C. Add water repellent to mortar per manufacturer's instruction.

3.2 CONSISTENCY

- A. Mortar shall be consistent to the satisfaction of the mason and may be re-tempered on the boards by adding small amounts of water and remixing if stiff due to evaporation.
- B. Do not use mortar that has become stiff due to hydration or that has been mixed more than two hours.

PART 4 - SUBMITTAL CHECK LIST

- A. Manufacturer's Literature.
- B. Color samples.

END OF SECTION 04 05 13

SECTION 04 05 19 - MASONRY REINFORCEMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to furnish and install all masonry reinforcement indicated, noted and detailed on the Drawings and specified herein.

1.2 REFERENCES

- A. Publications of the American Society for Testing and Materials, ASTM are referred to in this section.
- B. All work shall comply with ACI 530 and recommendations of The Masonry Society.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Arrange deliveries to provide sufficient quantities of reinforcement to permit continuity of masonry work.
- B. Store reinforcement on blocks or shores to prevent contact with the ground and keep covered to prevent damage from the weather.

1.4 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Manufacturer's data sheets, cutsheets and materials description.
 - 2. Test data for strength and integrity.
- B. Samples:
 - 1. Provide actual sample of unit as requested by the Architect.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, by one of the following acceptable manufacturers:
 - 1. Hohmann & Barnard (H&B).
 - 2. A-A Wire Products Company.
 - 3. Baltimore Birmingham.
 - 4. Wire-Bond
 - 5. Heckman Building Products, Inc.

6. Masonry Reinforcing Corp. of America.
7. National Wire Products Corp.

2.2 MATERIALS

A. Materials shall conform to the following requirements:

1. American Society for Testing and Materials (ASTM).
2. "Cold-Drawn Steel Wire for Concrete Reinforcement", ASTM Designation A82.
3. Mill galvanized wire in accordance with ASTM A641, Class 3 (0.80 oz./ft.2).

B. Provide deformed bars of the size indicated on the drawings of the following grades:

1. All reinforcing: ASTM A615, Grade 60.

C. Provide all required metal accessories, including spacers, chairs, ties and other devices necessary for properly assembling, placing, spacing and supporting all reinforcement in place.

2.3 HORIZONTAL JOINT REINFORCEMENT

A. Description:

1. Hot dipped galvanized.
2. Prefabricated from cold-drawn steel wire complying with ASTM A82.
3. Welded wire units comprised of two No. 9 gauge deformed continuous longitudinal side rods and a continuous No. 9 gauge plain cross rods at 16" o.c. maximum, spanning between to form a truss design.
4. Factory prefabricated Corners and Tees shall be used at all corners and intersecting walls and shall be of the same design, gauge, profile and finish as the continuous joint reinforcement.

B. Size:

1. Furnish in standard length sections, not less than 10'-0".
2. Width to be 2 inches less than width of the wall.

C. Provide one of the following approved products for single-wythe systems:

1. "H&B", #120, Lox-All Truss Mesh.

D. Provide one of the following approved products for multi-wythe adjustable systems:

1. "H&B", #170, Truss Lox-All Adjustable Eye-Wire.

2.4 CAVITY WALL REINFORCEMENT

A. Description:

1. Brick and Block Veneer: Hot dipped galvanized. Stone Veneer: Stainless steel, type 304.
2. Prefabricated from cold-drawn steel wire complying with ASTM A82.
3. 2-piece design comprised of a continuous joint reinforcement member, of a truss or ladder design, and a veneer wall tie that interlock together via an integral eye wire hook and loop.
4. Factory prefabricated Corners and Tees shall be used at all corners and intersecting walls and shall be of the same design, gauge, profile and finish as the continuous joint reinforcement.

B. Continuous Joint Reinforcement Member:

1. Wire units comprised of two No. 9 gauge deformed continuous longitudinal side rods and a continuous No. 9 gauge plain cross rods at 16" o.c. maximum, spanning between to form a truss or ladder design.
2. Integral projecting eyes factory welded to the continuous joint reinforcement. Length of projecting arms for eyes to be as required for thickness of wall cavity construction.

C. Veneer Wall Ties:

1. U-shaped ties with hooked open ends to interlock into eyes on continuous joint reinforcement member.

D. Provide one of the following approved products:

1. "H&B", Lox-All, Adjustable Eye Wire, Truss Type #170, with adjustable ties.
2. "H&B", Lox-All, Adjustable Eye Wire, Ladder Type #270, with adjustable ties.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Clean reinforcement of loose rust, mill scale, earth, ice or other materials which will reduce bond to mortar or grout.
- B. Position reinforcement accurately at the spacing shown. Support and secure vertical bars against displacement. Provide a clear distance between bars of not less than the nominal bar diameter or 1 inch, whichever is greater.
- C. Provide continuous horizontal joint reinforcement in all reinforced masonry walls at 16 inches o.c.
- D. For pilasters, provide a clear distance between vertical bars as shown, but not less than 1-1/2 times the nominal bar diameter or 1-1/2 inches, whichever is greater. Provide lateral ties as shown.
- E. A continuous bond beam with (2) #5 bars shall be provided at the top of all walls, and at all bearing elevations, unless otherwise indicated.

- F. At beams or lintels bearing on masonry walls, fill (2) block cores solid with grout and reinforce each core with one vertical #5 bar full height of wall, unless otherwise indicated.
- G. Place (1) full height vertical #5 bar at all wall corners, ends of walls, sides of openings and wall intersections, unless otherwise indicated. Place (2) vertical #5 bars at sides of openings 10'-0" wide and greater, unless otherwise indicated.

3.2 SPLICES

- A. Splice reinforcing bars where shown. Do not splice at other points unless approved by the Architect/Engineer.
- B. Splices shall be lapped, unless otherwise indicated.
- C. In splicing vertical bars or attaching to dowels, lap ends and place bars in contact and tie with wire.
- D. Splices in vertical reinforcement shall be lapped a minimum of 48 bar diameters, unless noted otherwise.

PART 4 - SUBMITTAL CHECKLIST

- A. Manufacturer's Literature.
- B. Samples.

END OF SECTION 04 05 19

SECTION 04 05 23 - MASONRY ACCESSORIES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. All labor, materials, equipment, special tools, supervision, and services required to provide and complete all masonry accessories for all masonry work on this Project as indicated, noted, detailed, and scheduled on the Drawings or specified herein.

1.2 DELIVERY, STORAGE AND HANDLING

- A. Storage: Store steel accessories off of the ground, on blocking, with waterproof cover.

1.3 QUALITY ASSURANCE

- A. All work shall comply with ACI-530 and recommendations of The Masonry Society.
- B. Hot dipped galvanizing after fabrication per ASTM A153 (1.5 oz./ft.).

1.4 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Manufacturer's data sheets, cutsheets and materials description.
- B. Samples:
 - 1. Provide actual sample of unit as requested by the Architect.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, by one of the following acceptable manufacturers:
 - 1. Hohmann & Barnard (H&B).
 - 2. Masonry Technology Inc. (MTI).
 - 3. Advanced Building Products.
 - 4. Sandell Manufacturing.
 - 5. A-A Wire Products Company.
 - 6. Baltimore Birmingham.
 - 7. DUR-O-WALL, Inc.
 - 8. Heckman Building Products, Inc.

9. Masonry Reinforcing Corp. of America.
10. National Wire Products Corp.

2.2 MATERIALS

A. Weep Holes:

1. Provide one of the following approved products:
 - a. "H&B", #QV-Quadro Vent.
 - b. "MTI", Cavity Vent.
 - c. "Advanced Building Products", Mortar Maze.
 - d. "Sandell Manufacturing", Mortar Net Weep Vents.

B. Control Joints:

1. Provide one of the following approved products:
 - a. "H&B", RS Series.
 - b. "BoMetals, Inc.", BCJ Series.
2. Preformed elastomeric rubber, with shear keys and flanges.

C. Veneer Wall Ties:

1. At veneer cavity walls with wood stud, metal stud, or poured concrete back-up (without continuous insulation):
 - a. Provide one of the following approved products:
 - 1) "H&B", #DW-10 with #VWT vee wall ties.
 - b. Hot dipped galvanized.
2. At veneer cavity walls with concrete masonry back-up (without continuous insulation):
 - a. See Specification 04 05 19 - Masonry Reinforcement.

D. Stone Anchors:

1. Provide one of the following approved products:
 - a. "H&B", #303 corrugated veneer tie and #305 dovetail slot.
2. 2-piece dovetail design comprised of continuous dovetail slot and corrugated masonry tie.
3. Stainless steel, type 304.

E. Column Anchors:

1. Provide one of the following approved products:
 - a. "H&B", #359-FH Weld-On Tie with #302W Column Web Tie.
2. Hot dipped galvanized.

F. Beam Anchors:

1. Provide one of the following approved products:
 - a. "H&B", #357.
2. Hot dipped galvanized.

G. Mortar/Grout Screen:

1. Provide one of the following approved products:
 - a. "H&B", #MGS.
2. 1/4" square microfilament screen.
3. Polypropylene polymer, non-corrosive.

H. Rebar Positioners:

1. Provide one of the following approved products:
 - a. "H&B", #RB and #RB-Twin.
2. Z-shaped wire bridge.
3. 9 gauge wire.
4. Size for block width and core dimension as required.
5. Hot dipped galvanized.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Weep Holes:

1. Install in strict accordance with the manufacturer's published recommendations.
2. Provide in head joints in first course immediately above all flashing, at spacing as indicated on the drawings. If not indicated, provide at 32" o.c.
3. Keep area above flashing free of mortar droppings.

B. Control Joints:

1. Install in strict accordance with the manufacturer's published recommendations.
2. Provide control joints at all inside corners and where new masonry abuts existing masonry.
3. Lap horizontal joint reinforcing at all control joints.
4. Locate vertical control joints at 16'-0" o.c. maximum for all masonry.
5. Locate elsewhere where indicated on the Drawings.

C. Ties and Anchors:

1. Install in strict accordance with the manufacturer's published recommendations.

2. Install ties into projecting eyes of truss or ladder type wall reinforcement, or into retainer area of supportive stud clip or anchor device.
3. Position for proper placement in veneer wall.

D. Rebar Positioners:

1. Install in strict accordance with the manufacturer's published recommendations.
2. Secure all vertical reinforcing bars in all masonry walls by use of positioners.
3. Position re-bar in center of concrete block core.
4. Rest bends of wire on shell of block to allow wire to span and bridge cell.

PART 4 - SUBMITTAL CHECKLIST

- A. Manufacturer's Literature.
- B. Samples.

END OF SECTION 04 05 23

SECTION 04 05 23.16 – MASONRY EMBEDDED FLASHING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Flexible flashing as shown for drawings and specified herein. Including, but not limited to thru-wall flashing and other flashing for masonry work.

1.2 SUBMITTALS

- A. Submit manufacturer's data sheets for each product used.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS AND TYPES

- A. Provide one of the following or an approved equivalent:
 - 1. York Manufacturing "Multi-Flash 500".
 - 2. STS Coatings "Wall Guardian Copper TWF"
 - 3. Wire-Bond "Copper Seal"

2.2 MATERIAL

- A. Characteristics:
 - 1. Type: Copper core with polymer fabric laminated to copper face on both sides with non-asphalt adhesive.
 - 2. Copper core: ASTM B370, CDA Alloy 110
 - 3. Weight: 3 oz. per square foot.
 - 4. Fabric: Polymer fabric; laminated both faces of copper core
 - 5. Size: Manufacturer's standard width rolls

PART 3 - EXECUTION

3.1 INSTALLATION

- A. A. Whether shown on Drawings or not, install flashing at the following locations:
 - 1. Install at heads and sills of all openings in walls, base courses, sill courses, angles and wall penetrations.

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2. Install thru-wall flashing at top course of all brick walls at retaining walls, planter walls, walls at site stairs and ramps, and all other similar conditions.
- B. Extend flashing 6" beyond opening or joint.
- C. Build in flashing with mortar as masonry work progresses.

PART 4 - SUBMITTAL CHECK LIST

- A. Manufacturer's material data sheet.

END OF SECTION 04 05 23.16

SECTION 04 21 13 - FACE BRICK MASONRY

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete brick masonry work.

1.2 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Employ masons skilled and experienced in the setting of brick.
 - 2. Only first-class brickwork will be accepted.
- B. Mock-Up Panel:
 - 1. Construct on site sample panel 4 foot wide x 4 foot high, of typical wall thickness and construction.
 - 2. Show proposed color range, texture, bond, mortar color, mortar joint and workmanship of masonry materials.
 - 3. Do not proceed with masonry work until sample panel has been approved.
 - 4. Use panel as standard of comparison for all masonry work.
 - 5. Do not destroy or remove panel until all masonry work is complete and accepted.

1.3 SUBMITTALS

- A. Samples:
 - 1. If specific brick has been specified: Masonry contractor to submit brick panels or 5-brick pallet samples for final approval by Architect. Color, texture and range of brick to be submitted as specified.
 - 2. If specific brick has not been specified: Masonry contractor to select and submit brick panels or 5-brick pallet samples for final selection by Architect. Color, texture and range of brick to be submitted to be per direction of the Architect.
 - 3. Brick submitted shall conform to these specifications and be within color and texture range specified.
 - 4. Selected brick samples shall have mock-up panels constructed for final selection and approval.
 - 5. Lay additional sample panels as directed by Architect
 - 6. Architect reserves the right to select any brick from any supplier.
- B. Test reports indicating compressive strength, water absorption, saturation and suction.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store brick off ground to prevent contamination by mud, dust or materials likely to cause staining or other defects.

- B. Cover materials as necessary to protect from elements.

PART 2 - PRODUCTS

2.1 FACE BRICK

- A. Description:
 - 1. Size: Typical standard Modular units: 8 inches long x 2-1/4 inches high x not less than 3-5/8 inches deep.
 - 2. Manufacturer/Color: Refer to Drawings. Brick to closely match existing building.
- B. Special Shapes:
 - 1. Cut standard unit with power saw or provide units manufactured to sizes or shape required.
 - 2. Provide solid brick, watertable profile, finished ends, special sizes, etc. as required.
 - 3. Special shape items to match selected brick in every other respect.
- C. Conform to ASTM C 216, Grade SW, Type FBS.
- D. Brick submitted shall be from brick manufacturers who are able to provide certification and physical evidence that the brick has been successfully used in projects of similar exposure for at least three complete climatic cycles without physical or visual changes.
- E. Do not exceed variations in color and texture of accepted samples and mock-up.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify initial absorption rate of brick is within acceptable limits.
- B. Reduce initial absorption exceeding 20 g./30sq. in/min by thoroughly wetting with clean water 24 hours prior to placement.

3.2 INSTALLATION

- A. General:
 - 1. Lay brick plumb and true to lines.
 - 2. Cut exposed brick with masonry saw.
 - 3. Anchor brick veneer to backing with metal reinforcement.
 - 4. Where fresh masonry joins partially set masonry.
 - a. Remove loose brick and mortar.
 - b. Clean and lightly wet exposed surface of set masonry.

5. Stop off horizontal run of masonry by racking back 1/2 length of unit in each course.
6. Toothing is not permitted except upon written acceptance of the Architect.

B. Weep Holes:

1. See Section 04 05 23 - Masonry Accessories.
2. Keep weep holes and area above flashing free of mortar droppings.

C. Sealant Recesses:

1. Retain joints around outside perimeters of exterior doors, windows frames and other wall openings.
2. Depth: Uniform 3/4 inch.
3. Width: 3/8 inch.

D. Movement Joints:

1. Keep clean from all mortar and debris.
2. Locate as shown on drawings.

E. Sealant:

1. See Section 07 92 00-Joint Sealers for all labor and material for sealing perimeter recesses and joints.

3.3 PROJECT CONDITIONS

A. Staining: Prevent grout or mortar from staining the face of masonry to be left exposed or painted.

1. Remove immediately grout or mortar in contact with face of masonry.
2. Protect sills, ledges and projections from mortar droppings.
3. Protect door jambs and corners from damages during construction.

B. Cold Weather Protection:

1. Preparation:
 - a. If ice or snow has formed on masonry bed, remove by carefully applying heat until top surface is dry to the touch.
 - b. Remove all masonry deemed frozen or damaged.
2. Products:
 - a. When brick suction exceeds 20 g/30 sq. in./min., sprinkle with heated water.
 - 1) When units are above 32°F, heat water above 70°F.
 - 2) When units are below 32°F, heat water above 130°F.
 - b. Use dry masonry units.
 - c. Do not use wet or frozen units.

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PART 4 - SUBMITTAL CHECK LIST

- A. Brick Samples.
- B. Test Reports.
- C. Mock-up Panel.

END OF SECTION 04 21 13

SECTION 04 22 00 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to provide and complete all concrete unit masonry work on this Project as indicated, noted, detailed and scheduled on the drawings and specified herein.

1.2 QUALITY ASSURANCE

- A. Comply with the provisions of the latest editions of the following Codes, Specification and Standards, except as otherwise indicated on the Drawings or specified herein.
 - 1. The Masonry Society, Masonry Designer's Guide.
 - 2. ACI 530 Building Code Requirements for Masonry Structures.
 - 3. ACI 530.1 Specifications for Masonry Structure.
 - 4. NCMA "Specification for the Design and Construction of Load-Bearing Concrete Masonry".
 - 5. "American Standard Building Code Requirements for Masonry, A41.1-1953 (R1970)".
 - 6. American Society for Testing and Materials (ASTM).
- B. Concrete masonry units used throughout the work shall be obtained from one manufacturer.
- C. Reinforced hollow load-bearing CMU shall be Grade N-I moisture controlled units conforming to ASTM C90-85. Minimum Compressive Strength required for units shall be 2,000 psi on the NET AREA of the units and 1,000 psi on the GROSS AREA. Normal weight or light weight units.
- D. Provide special shapes where required, for lintels, bond beams, pilasters, headers and other special conditions.

1.3 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's catalog data, cutsheets, literature, specifications and installation instructions.
 - 2. Test data for unit strength.
- B. Color Samples:
 - 1. If color is indicated, submit actual sample of finish selected for final review and approval.
 - 2. If not indicated, color to be selected by Architect from manufacturer's entire selection.
 - 3. Submit actual samples for review and approval if requested.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS (CMU)

A. Size:

1. Standard-sized units shall be used, unless otherwise noted.
2. Nominal face dimensions of 16 inches long x 8 inches high.
3. Thickness of units shall be as indicated on drawings.
4. See drawings for additional requirements or clarifications for type, face, texture, finish, color, etc.

B. Properties:

1. Below Grade: Standard/Normal weight units with sand, gravel, crushed stone, aggregate.
2. Above Grade: Light weight units with expanded aggregate.
3. Shall comply with the requirements of ASTM C90.

C. Water Repellent:

1. Provide one of the following approved products:
 - a. "Grace Construction Products"; Dry-Block.
 - b. "BASF"; Rheopel Plus.
 - c. "ACM"; RainBloc.
 - d. "Krete"; HQ.
2. Use for all exterior walls whose concrete masonry face is exposed to the exterior. Not required for masonry backup in veneer walls (brick, stone, etc.).

D. Reinforced Load-Bearing CMU and CMU Shear Walls:

1. Grade N-1 moisture controlled units.
2. Minimum compressive strength of 2,000 psi on the NET AREA of the units. Minimum compressive strength of 1,000 psi on the GROSS AREA of the units. Standard/Normal weight or Light weight units.
3. Shall comply with the requirements of ASTM C90-85.
4. Net compressive strength: $f'_m = 1,500$ p.s.i minimum (Prism or Unit Strength Method).

E. Color:

1. Standard natural, non-colored concrete masonry unit.

F. Provide one of the following approved products:

1. "4D/Schuster's (Oldcastle)"; Custom Architectural Masonry Units.
2. "General Shale"; Custom Architectural Masonry Units.
3. "Lee Building Products"; Custom Architectural Masonry Units.
4. "Masolite"; Concrete Masonry Units.

2.2 SPECIAL UNITS

- A. Provide special shapes where required throughout the work for lintels, bond beams, bullnoses, pilasters, headers and other special conditions.
- B. Same material, surface, texture, aggregate, grade and color of adjacent concrete masonry units.
- C. Brick units for bearing, leveling and filling.
- D. Bullnose units with 1 inch radius corner.
- E. U-block and bond beam units. Center-scored units with 3/8 inch vertical groove to form an 8 inch x 8 inch face pattern. Scoring pattern may be required to be on both faces of masonry unit.

2.3 PRE-CAST CONCRETE LINTELS

- A. Design and strength as approved by the Architect.
- B. Same material, surface, texture and color of adjacent concrete masonry units.
- C. Score with vertical joints to match block pattern, if desired by the Architect.

2.4 MORTAR

- A. See Specification Section 04 05 13 - Mortar.

2.5 STEEL REINFORCEMENT

- A. See Specification Section 04 05 19 - Masonry Reinforcement.

2.6 GROUT

- A. Grout for reinforced masonry shall have a minimum compressive strength of 2,500 psi at 28 days and shall comply with requirements of ASTM C150.
- B. Portland Cement, Type 1, and shall comply with the requirements of ASTM C150.
- C. Fine aggregates for grout shall comply with the requirements of ASTM C404.
- D. Coarse aggregates for grout shall be pea gravel, 3/8" diameter maximum.
- E. Water shall be clean, fresh and potable.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Bond:

1. Running bond, unless otherwise indicated.

B. Tooling:

1. Smooth concave joints for all areas, except center scored block.
2. Raked joint for center scored block.

C. Placing:

1. Set units plumb and true to line with level, accurately spaced and coordinated with other work.
2. Lay CMU units with full-face shell mortar beds.
3. Fill vertical head joints solidly with mortar from face of unit to a distance behind face equal to not less than the thickness of the longitudinal face shells.
4. Solidly bed cross-webs of starting courses in mortar.
5. Provide 3/8 inch joints unless otherwise shown.

D. Bond Beams:

1. Use special units or modify regular units to allow for placement of continuous horizontal reinforcing bars as indicated.
2. Place wire screening or expanded metal lath in mortar joints under bond beam courses over non-reinforced vertical cores, or provide units with solid bottoms.

E. Pilasters:

1. Lay wall and pilaster units together to maximum pour height shown.
2. Pilaster units shall provide minimum clearances and grout coverage for number and size of vertical reinforcement as indicated.

F. Bullnose Units:

1. Install at all exposed vertical corners, unless otherwise indicated.
2. Install at all exposed horizontal edges, unless otherwise indicated.

G. Square Edge Units:

1. Use only where specifically noted as allowed in lieu of bullnose edges.
2. All exposed square edge block units must be formed using a Universal Press Top (UPT) mold.

H. Build masonry construction to the full thickness shown, except build single-wythe walls to the actual thickness of the masonry units, using unit of nominal thickness as indicated or specified.

- I. Cut masonry units with motor-driven saw designed to cut masonry, with clean, sharp, unchipped edges. Use full units without cutting wherever possible. Use dry cutting saws to cut concrete masonry units.
- J. Maintain vertical continuity of core or cell cavities which are to be reinforced or grouted, to provide minimum clearance and grout coverage for vertical reinforcing bars. Solidly bed webs in mortar where adjacent to reinforced cores.
- K. DO NOT WET concrete masonry units.
- L. Use no piece shorter than 8 inches.
- M. Bond all corners in each course.
- N. All masonry walls shall be laterally braced by the Contractor as required until all structural framing and decking have been installed in units of construction adjacent to the walls.
- O. As the work progresses, install all built-in items as specified under this or any other Section.

3.2 GROUTING

- A. Contractor may use either low-lift or high-lift grouting techniques, subject to the following requirements.
- B. All masonry units located below grade shall be grouted solid, whether indicated or not.
- C. Low Lift Grouting:
 - 1. Vertical cells to be filled shall have vertical alignment sufficient to maintain a clear, unobstructed continuous vertical fall measuring not less than 2 inches by 3 inches.
 - 2. Units must be laid to a height not to exceed 8 feet. If height exceeds 4 feet, cleanouts must be used. Stop pour at course below bond beams.
 - 3. Place vertical steel into cells with enough steel extending to provide lap splice of 48 bar diameters or as indicated on drawings.
 - 4. In grouting vertical cells, stop grout 1-1/2 inches below top of unit or over horizontal steel which shall be fully embedded in grout.
 - 5. Place grout continuously, using a chute or container with spout. Rod or vibrate grout during placing. Do not interrupt placing of grout for more than 1 hour.
 - 6. Place horizontal bond beam reinforcement as the masonry units are laid. Lap at corners and intersections. Place grout in bond beams before filling vertical cores above bond beams.
 - 7. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist displacement of masonry units and breaking of mortar bond. Reinforce or brace cleanouts to resist grout pressure.
 - 8. Prior to grouting, inspect and clean grout spaces. Clean top surfaces of all structural members supporting masonry to ensure bond.
- D. High-Lift Grouting:
 - 1. All paragraphs and items for Low-Lift Grouting above apply to this section, with the exception of the limitation of height that units must be laid to.

2. Limit grout pours to sections which can be completed in one working day with not more than one hour interruption of pouring operation. Place grout in lifts which do not exceed 4 feet. Allow not less than 30 minutes nor more than one hour between lifts of a given pour. Rod or vibrate each grout lift during pouring operation.
3. Place grout by pumping into grout spaces. Alternate placing methods shall be approved by the Architect/Engineer.
4. Vertical reinforcement shall be held in position at top and bottom and at intervals not exceeding 6 feet.
5. Minimum cell dimension shall be 3 inches for high-lift grouting.

3.3 FORMWORK AND SHORES

- A. Provide temporary formwork and shores as required for temporary support of reinforced masonry elements. Design, erect, support, brace and maintain formwork properly.
- B. Construct formwork to conform to shape, line and dimensions as shown.
- C. Forms and/or shores shall not be removed until reinforced masonry member has hardened sufficiently to carry its own weight and all other loads that may be placed on it during construction.
- D. Provide bracing adequate to resist wind loads, bracing shall remain in place until metal roof deck installation and attachment to masonry walls is completed.

3.4 REPAIR, POINTING AND CLEANING

- A. By brushing, stoning, rubbing, detergent and water, or other approved method.
- B. Remove and replace masonry units that are loose, chipped, broken or otherwise damaged. Provide new units to match adjoining and adjacent units, and install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- C. During the tooling of joints, enlarge any voids or holes and completely fill with mortar. Point-up all joints to provide a neat, uniform appearance.
- D. Clean exposed CMU masonry by dry brushing at the end of each day's work and after final pointing to remove mortar spots and droppings. Comply with recommendations in NCMA TEK Bulletin No. 28.

PART 4 - SUBMITTAL CHECKLIST

- A. Product Data.
- B. Color Samples.

END OF SECTION 04 22 00

SECTION 04 43 01 - LIMESTONE

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to furnish and install all cut limestone indicated, noted and detailed on the drawings and specified herein.

1.2 QUALITY ASSURANCE

- A. Comply with Industry Standards and Practices as set forth by the Indiana Limestone Institute of America, Inc.

1.3 REFERENCES

- A. Publications of the following institutes, associations, societies, and agencies are referred to in this Section.
 - 1. American Society for Testing and Materials (ASTM).
 - 2. Indiana Limestone Institute of America, Inc. (ILI).
- B. Fabricator shall be an established firm regularly engaged in the fabrication of limestone. Fabricator shall have adequate equipment and qualified personnel to fabricate quality stone products and have past experience in the fabrication of limestone for projects of a similar nature.
- C. Quarrier and fabricator of the stone shall be a member in good standing of the Indiana Limestone Institute of America, Inc.

1.4 SUBMITTALS

- A. Furnish for approval by the Architect, complete cutting and setting drawings for all cut stone work.
 - 1. Show in detail the sizes, sections and dimensions of stone, the arrangement of joints and bonding, anchoring and other necessary details.
 - 2. Strictly follow all jointing shown by the Architect on contract drawings, unless modifications are agreed upon in writing or indicated upon the approved Shop Drawings.
 - 3. If the contract drawings do not show the intent of the jointing, it will be the fabricator's responsibility to establish the jointing in accordance with industry standards and practices.
 - 4. The general contractor shall furnish all field dimensions necessary for fabrication.
 - 5. Mark each stone on an unexposed surface and indicate its location with a corresponding mark on the settings drawings.
 - 6. Clearly indicate on the cutting and setting drawings, all provisions for the anchoring, doweling, and cramping of work, in keeping with standard practices, and for the support of stone by shelf angles and loose steel, etc., when required.

- B. Furnish for approval by the Architect, two 12" x 12" samples of the limestone proposed for use in this project. Illustrate color range, texture and finish.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials shall conform to the following requirements:
 - 1. "Stainless and heat resisting chromium-nickel steel plate, sheet, and strip", ASTM designation A167.
 - 2. "Dimension Limestone", ASTM designation C568.
- B. Fabricate dowels, anchors, cramps, dovetails and slots from Type 18-8, 302 stainless steel conforming to ASTM designation A167.
- C. Cut stone shall be Indiana Limestone quarried in Lawrence, Monroe or Owen Counties, Indiana.
 - 1. Grade: Standard.
 - 2. Color: Natural Buff.
 - 3. Conform to ASTM designation C568 for category II medium density stone with 4,000 psi compressive strength.

2.2 FABRICATION

- A. Cut stone accurately to shade and dimension, full to the square, with jointing as shown on the drawings.
 - 1. Dress all exposed faces and unless otherwise indicated, beds and joints shall be right angles to the face. Saw or dress backs parallel to face.
 - 2. Joints unless otherwise indicated shall have a uniform thickness of 3/8 inch.
 - 3. Cut reglets and drips where indicated on the drawings.
 - 4. Cut drips under all window and door heads, window sills, water tables, and other projecting courses.
 - 5. Provide holes and sinkages for anchors and back-check structural work.
 - 6. Provide lewis holes in stones weighing over 100 pounds and over 3-1/2 inch thick.

2.3 DELIVERY, STORAGE AND HANDLING

- A. Carefully pack all cut limestone for transportation, exercising all customary and reasonable precautions against damage in transit.
- B. Load and ship stone in sequence with erection and in quantities sufficient with construction phase.
- C. Store all stone clear of ground on non-staining skids (cypress, white pine, poplar or yellow pine without excessive amount of resin). DO NOT use preservative treated wood, chestnut, walnut, fir, oak or other woods containing tannin.
- D. Cover stone with waterproof paper or polyethylene.

PART 3 - EXECUTION

3.1 SETTING

- A. Set all limestone accurately in strict accordance with the contract and shop drawings.
- B. When necessary, before setting in the wall, thoroughly clean all exposed stone surfaces by washing with fiber brush and soap powder, followed by a thorough drenching with clear water.
- C. Drench all stone joint surfaces not thoroughly wet with clear water just prior to setting.
- D. Except as otherwise specially noted, set every stone in full beds of mortar with all vertical joints slushed full. Completely fill all anchor, dowel, and similar holes. All bed and vertical joints shall be 3/8 inch unless otherwise noted.
- E. Place lead or plastic setting pads under heavy stones, column drums, etc., in same thickness as joint, and in sufficient quantity to avoid squeezing mortar out. Do not set heavy stones or projecting courses until mortar in courses below has hardened sufficiently to avoid squeezing.
- F. Joints can be tooled when initial set has occurred, or raked out 1 inch and pointed later. If pointed with sealant, conform to manufacturer's instructions regarding raked depth and sealant applications.
- G. Securely prop or anchor projecting stones until the wall above is set.
- H. Embed in mortar only the ends of lugged sills and steps. Leave balance of joint open until finally pointed.
- I. All cornice, copings, projecting belt courses, other projecting courses, steps, and platforms (in general, all stone areas either partially or totally horizontal) should be set with unfilled vertical joints. After setting, point or install sealant.
- J. In cold weather, follow International Masonry Industry All-Weather Council recommendations for setting from 40° to 20°F, except that no additives are to be used in the setting mortar. Heated enclosures are to be used for work done below 20°F.
- K. Coat backs of all stone with cementitious dampproofing, non-staining to exposed stone surfaces.

3.2 CLEANING

- A. Wash the stone with fiber brushes, mild soap powder or detergent and clean water or approved mechanical cleaning process.
- B. Provide special consideration and protection when brickwork is cleaned above the limestone. Strong acid compounds used for cleaning brick will burn and discolor the limestone.
- C. Use of sand blasting, wire brushes or acids will only be permitted under special circumstances, approved by Architect.

3.3 PROTECTION OF FINISHED WORK

- A. During construction, carefully cover tops of walls at night, and especially during any precipitation or other inclement weather.
- B. Adequately protect walls from dropping at all times.
- C. Whenever necessary, place substantial wooden covering to protect the stone work. Use non-staining building paper or membrane under the wood. Maintain all covering until removed to permit final clearing of the stone work.

3.4 CLEANING UP

- A. Upon completion, remove all materials, equipment and debris from the premises.

PART 4 - SUBMITTAL CHECK LIST

- A. Cutting and Setting Shop Drawings.
- B. Samples.

END OF SECTION 04 43 01

SECTION 05 10 00 - STRUCTURAL STEEL

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to fabricate, deliver and erect all structural steel indicated, noted and detailed on the drawings and specified herein.

1.2 QUALITY ASSURANCE

- A. All shop and field welders must hold a current and valid certificate issued by the American Welding Society. Certificates shall be carried and presented upon request of Architect/Engineer.

1.3 REFERENCE

- A. Publications of the following institutes, associations, societies and agencies are referred to in this Section.
 - 1. American Society for Testing & Materials, ASTM.
 - 2. American Institute of Steel Construction, AISC.
 - 3. Steel Structures Painting Council, SSPC.
 - 4. American Welding Society, AWS.
- B. Comply with the applicable portions of the following publications.
 - 1. "Manual of Steel Construction", AISC.
 - 2. "Specifications for Design, Fabrication, and Erection of Structural Steel for Buildings", AISC.
 - 3. "Structural Steel Detailing", AISC.
 - 4. "Specifications for A-36 and A-50 Steel Arc Welding Electrodes", AWS.
 - 5. "Code for Arc Welding in Building Construction", AWS.
 - 6. "Steel Structures Painting Manual", SSPC Vol. 2.
 - 7. "Riveted and Bolted Structural Joints", AISC.
 - 8. "Specifications for Structural Joints Using ASTM A325 and A490 Bolts", AISC.
- C. All structural steel and accessories shall be domestic products. Imported products will not be approved or used.

1.4 SUBMITTALS

- A. Furnish to the Architect/Engineer for his approval complete shop and field erection drawings.
 - 1. Submit drawings prior to fabrication and erection of structural steel.
 - 2. Base drawings on AISC Publication "Structural Steel Detailing".

3. All connections not sized on drawings to be designed by licensed professional engineer, and certified designs to be indicated on shop drawings.
4. Include complete details and schedules for the fabrication of each member.
5. Include complete details, schedules, procedures and diagrams showing sequence of erection.
6. Each member shown on the shop drawings shall be marked in such a manner that the member designations on the drawings coincide with the member designations on the member in the field.
7. Complete anchor bolt setting plan for use in setting anchor bolts and leveling plates.

B. Furnish the Architect/Engineer with the following certificates.

1. AWS Certification of all welders who will perform work on this project.
2. Certification form supplier that structural steel furnished for this project conforms to this specification.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Arrange deliveries in quantities to permit continuity of installation.
- B. Store on blocks off ground and cover to prevent rusting, denting and damage to materials or structure.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Structural Steel:

1. ASTM Specification A36 (36 KSI) except as follows:
 - a. Tubular Steel:
 - 1) ASTM Specification A500 Grade B (46 KSI) (Cold Formed) or A501 (Hot Formed)
 - b. Steel Pipe:
 - 1) ASTM Specification A500 Grade B, (42 KSI).
 - c. Wide Flange Shapes:
 - 1) ASTM Specification A992 (50 KSI).

B. Paint For Shop Application:

1. Prime with Type 1, oil alkyd, red oxide to minimum 2 mil dry thickness.

C. High-Strength Bolts, Including Nuts and Washers:

1. ASTM Specification A325.
2. Heavy hexagon structural bolts, heavy hexagon nuts and washers as required, unless otherwise indicated.
3. Washers for high strength bolts shall be flat circular hardened steel washers conforming to ASTM F436.

- D. Welded Headed Studs Used As Concrete Anchors:
 - 1. Shall be 1/2" diameter x 4" A.W.L., unless otherwise noted.
 - 2. Low carbon steel solid fluxed studs complying with ASTM A-108 with a minimum $F_u = 60$ KSI.
 - 3. Shall be automatically end welded.
- E. Bolts and Nuts, Other Than High-Strength:
 - 1. ASTM Specification A307, Grade A.
- F. Plain Washers, Other Than Those In Contact With High-Strength Bolt Heads and Nuts):
 - 1. ASNI Standard B18.22.1, Type B.
- G. Anchor Bolts:
 - 1. Comply with ASTM F1554 Grade 36.
 - 2. Non-headed type with heavy hexagon structural nuts and washers as required, unless otherwise indicated.
- H. Electrodes for Welding:
 - 1. Comply with AWS Code, using ASTM A233 E-70 series covered mild steel electrodes.
- I. Non-Shrink Grout:
 - 1. Design is based on use of "Embeco" high-strength non-shrink grout manufactured by Master Builders.
 - 2. Non-Shrink grout shall be that upon which design is based or an equal approved by the Architect.
- J. Remove all rolling and mill identification marks on all exposed members.

2.2 FABRICATION

- A. Rolled steel to shapes indicated with straight lines, sharp angles and smooth curves. Finished members to be true to line and free from twists, bends and open joints. Properly mark and match-mark all materials for field assembly.
- B. Fitting:
 - 1. Bearing surfaces: Planed to true beds.
 - 2. Abutting surfaces: Closely fitted.
- C. Use standard AISC framed connections using ASTM A325 bolts for attaching beams to columns except as otherwise shown. Develop design capacity of beam if not otherwise specified.\
- D. Holes for turned bolts: 1/6 in. larger than external diameter of bolt.

- E. Weld all shop connections except where otherwise shown or specified. Grind smooth all welds exposed in finished areas.

2.3 SHOP PAINTING

- A. Clean structural steel of rust, scale, oil, grease or other foreign matter in accordance with SSPC Specifications SP3.
- B. After cleaning apply one shop coat of primer.
 - 1. Apply shop coat of Type 1, oil alkyd, red oxide to minimum 2 mil dry film thickness
 - 2. Field touch-up all damaged paint areas using primer paint furnished by the fabricator. Touch-up includes bolts.
- C. All exterior structural steel exposed to weather shall be hot dipped galvanized.
 - 1. Hot dip galvanize per ASTM A123, minimum 2.0 ounces per square foot.
 - 2. Touch-up primer: SSPC 20, Type III inorganic zinc rich, 95% weight of dry film.

2.4 COOPERATION

- A. Provide holes and connections required for other branches of the work where indicated. Secure from other trades associated on the project all necessary drawings and/or templates showing exact location and details required.
- B. Coordinate elevations with joint supplier.

PART 3 - EXECUTION

3.1 FIELD MEASUREMENT & COORDINATION

- A. The contractor is responsible for obtaining all necessary field measurements at the job site and will be held responsible for their accuracy and for the accurate fitting of this work with the work of others.
- B. Coordinate the installation of all holes, slots, anchoring assemblies and other necessary devices required by other sections of this specification. Do not install or attach such material which is acknowledge by AISC, ASTM, SSPC, AWS or manufacturer=s literature to be detrimental to the strength and durability of the structural steel. Do not make any such installations without prior review by the Architect/Engineer. Cutting, burning, drilling or punching of the steel in the field will not be permitted unless approved by the Architect/Engineer.

3.2 ERECTION

- A. Grout under base plates and at other connections as shown on the Contract Drawings using non-shrink grout as specified herein. Grout under column base plates and secure hold down nuts before any other members are connected to columns. Provide leveling plates, double nuts shall not be used for leveling.
- B. Install anchor bolts and other connectors required for securing structural steel to foundations and other in-place work.

3.3 CONNECTIONS

- A. Bolts in connections not within the slip-critical category shall be tightened to the snug tight condition, as defined in paragraph 8 (c) of the "Specification for Structural Joints Using ASTM A325 or A490 bolts".
- B. Bolts in connections within the slip-critical category shall be tightened using the turn-of-nut method, as defined in paragraph 8 (d) (1) of the "Specification for Structural Joints Using ASTM A325 or A490 bolts".
- C. All shop connections for beams and minor parts shall be welded.
- D. All field connections for beams and minor parts shall be bolted, where possible. Short slotted holes in beam web shall be detailed for beam connections where possible.
- E. Details shown on the plans are to illustrate general methods of connection and do not necessarily include all pieces required to complete the work. Such pieces are to be furnished as specified and/or required to complete the work.
- F. Connections not shown on the drawings shall be designed by the steel supplier in accordance with the AISC "Manual of Steel Construction". Simple span connections for beams shall be designed for one-half the beam load capacity as given in the AISC "Uniform Load constants for Beams Laterally Supported" Tables.
- G. Length of connection angles or plates for beam-to-column connections shall be the largest standard length less than or equal to the "T" dimension of the beam. Standard lengths of connection angles are found in "A.I.S.C. Manual of Steel Construction, Framed Beam Connections, Table II".
- H. All connections not shown on the drawings shall be designed by a Structural Engineer registered in the state where the structural steel is to be erected, retained by the steel fabricator. All calculations and shop drawings shall be duly stamped by the Registered Structural Engineer and submitted for review by the Structural Engineer. Stamping of shop drawings shall be for the exclusive purpose of certifying that the connections are detailed as per the design performed by the Registered Structural Engineer. Failure to submit stamped shop drawings and stamped calculations shall be sufficient cause for rejection of shop drawings. The Contractor shall be liable for the dimension, fit, tolerances, fabrication and erection.
- I. Welds shall be made only by operators who are qualified as prescribed in the "Standard Qualifications Procedure" of the American Welding Society. The Contractor shall furnish the Engineer with documents establishing the qualifications of welders involved in the work.
- J. Holes for the connection of all structural steel work, including slotted holes, shall be punched or drilled in the shop. Any additional holes not shown on the shop drawings shall be approved by the Engineer and shall be drilled in the field.

- K. All welds shall be pre-qualified in accordance with AWS D1.1.
- L. After erection and inspection, welded and bolted connections and abraded areas shall be thoroughly cleaned and covered with "Shop Coat" paint applied by this contractor.

3.4 FLAME CUTTING

- A. There shall be no flame cutting in the field without the approval of the Architect. If cutting is approved, cut members shall be finished in a manner and to an appearance acceptable to the Architect.

3.5 WELDING INSPECTION

- A. The Inspector(s) shall be an AWS Certified Welding Inspector (CWI) qualified and certified in accordance with the provisions of AWS QC1, Standard for Qualification and Certification of Welding Inspectors.
- B. The Inspector shall ascertain that all fabrication and erection by welding is performed in accordance with the requirements of the contract documents.
- C. The Inspector shall make certain that all welding procedures are pre-qualified.
- D. The Inspector shall inspect the welding equipment to be used for the work to make certain that it conforms to the requirements of AWS D1.1.
- E. The Inspector shall require re-qualification of any welder or welding operator who has for a period exceeding six months not used the process for which the welder or welding operator was qualified.
- F. The Inspector shall make certain that the size, length, and location of all welds conform to the detail drawings and that no unspecified welds have been added without approval.
- G. The Inspector shall make certain that only welding procedures are employed which meet the provisions of AWS D1.1.
- H. The Inspector shall make certain that electrodes are used only in the positions and with the type of welding current and polarity for which they are classified.
- I. The Inspector shall, at suitable intervals, observe joint preparation, assembly practice, the welding techniques, and performance of each welder, welding operator, and tacker to make certain that the applicable requirements of AWS D1.1 are met.
- J. Inspectors shall identify with a distinguishing mark or other recording methods all parts of joints that they have inspected and accepted.
- K. The Inspector shall keep a record of qualifications of all welders, welding operators, and tackers, and all procedure qualifications or other tests that are made and such other information as may be required.
- L. The contractor shall be responsible for visual inspection and necessary correction of all deficiencies in materials and workmanship in accordance with the requirements of AWS D1.1.

- M. The contractor shall comply with all requests of the Inspector(s) to correct deficiencies in materials and workmanship as provided in the contract documents.
- N. In the event that faulty welding or its removal for re-welding damages the base metal so that in the judgment of the Engineer its retention is not in accordance with the intent of the contract documents, the contractor shall remove and replace the damaged base metal.
- O. All structural welds shall be visually inspected and all complete penetration welds shall be ultrasonically tested by a qualified inspector. Joint fit-up of all complete penetration and partial penetration welds shall be inspected and approved by a qualified inspector prior to making the first pass.

PART 4 - SUBMITTAL CHECK LIST

- A. Shop Drawings.
- B. Material certification stating source of steel.
- C. Certificates of Welders.

END OF SECTION 05 10 00

SECTION 05 50 00 - MISCELLANEOUS METALS

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Miscellaneous metals include items made from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or other metal systems specified elsewhere.
- B. Types of work in this section include, but are not limited to the following:
 - 1. Loose Steel Lintels.
 - 2. Miscellaneous Framing and Supports.
 - 3. Steel Concrete Inserts.
 - 4. Pipe Bollards.

1.2 QUALITY ASSURANCE

- A. Comply with the applicable requirements of the following manuals, specifications and codes:
 - 1. "Specification for Design, Fabrication and Erection of Structural Steel for Buildings", AISC.
 - 2. "Code for Arc and Gas Welding in Building Construction", AWS.
 - 3. "Structural Steel Detailing", AISC.

1.3 REFERENCES

- A. Publications of the following institutes, associations, societies and agencies are referred to in this Section.
 - 1. American Society for Testing and Materials, ASTM.
 - 2. National Association of Architectural Metals Manufacturers, NAAMM.
 - 3. Steel Structures Painting Council, SSPC.
 - 4. American Welding Society, AWS.
 - 5. American Institute of Steel Construction, AISC.
- B. All Miscellaneous Metals and fabricated items shall be domestic manufacture. Imported metals and products will not be approved or used.

1.4 SUBMITTALS

- A. Furnish to the Architect for approval, complete shop and field erection drawings.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Fabricate and deliver miscellaneous metal items in ample time to avoid delays in the progress of any trade working on the project.
- B. Store on blocks off ground and cover to prevent rusting, denting and damage to materials or structure.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials shall conform with the following requirements:
 - 1. "Structural Steel", ASTM Designation A36.
 - 2. "Low and Intermediate Tensile Strength Carbon Steel Plates of Structural Quality", ASTM Designation A283.
 - 3. "Cold-Rolled Carbon Sheets, Commercial Quality", ASTM Designation A36.
- B. Structural Steel: 36,000 psi yield point rolled to the size and shapes indicated on the drawings.
- C. Welding Electrodes: Series #70, Grade AWS-2.
- D. Primer Paint: Supplier's standard shop primer paint.

2.2 MISCELLANEOUS METAL ITEMS

- A. Miscellaneous Metal Items but are not necessarily limited to the following:
 - 1. Steel angles, shelf angles, receiving angles, lintels and miscellaneous supports requiring fabrication.
 - 2. All bolts, inserts, clip angles, struts and channel framing.
 - 3. Handrails shall be steel pipe with welded joints. All welds shall be ground smooth. Provide closure plates at ends of all rails. Return all ends to wall unless otherwise detailed.

2.3 WORKMANSHIP

- A. Workmanship required in the execution of the work shall be of the best quality and subject to the approval of the Architect.
- B. Form metal work to shape and size, with sharp lines and angles. Leave clean, true lines and surfaces when shearing or punching. Weld permanent connections where practical.
- C. Holes in structural steel framing for attaching miscellaneous metal items will be provided by the miscellaneous metal erector.

2.4 FABRICATION

- A. The Contractor is responsible for verifying all dimensions of work adjoining. Inspect such work before fabrication and/or installation of items specified. Obtain measurements of adjoining work so work will fit closely to spaces provided.
- B. Provide opening angles, lintels and miscellaneous supports shown, requiring fabricating in accordance with notes and details.
- C. The fabricator shall furnish all necessary templates and patterns required by other trades. Also furnish all items except otherwise specified, pertaining to work under other sections.

2.5 SHOP PAINTING

- A. Clean all ferrous metals of all rust, scale, oil, grease or other foreign matter in accordance with SSPC Specification SP2-63.
- B. After cleaning apply one coat Type 1, oil alkyd, red oxide to minimum 2 mil dry film thickness
- C. All exterior miscellaneous steel to be hot dipped galvanized.
 - 1. Hot dip galvanizing per ASTM A123, min. 2.0 ounces per square foot.
 - 2. Touch up primer: SSPC 20, Type I inorganic zinc rich.

PART 3 - EXECUTION

3.1 FIELD MEASUREMENT

- A. The Contractor is responsible for obtaining all necessary field measurements at the job site and will be held responsible for their accuracy and for the accurate fitting of this work with the work of others.

3.2 GENERAL

- A. Perform all cutting, fitting and drilling necessary to properly set the work herein specified and as required for proper installation of adjacent or engaging work of all trades.

3.3 ADJUST AND CLEAN

- A. Touch Up Painting:
 - 1. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting.
 - 2. Apply to provide a minimum dry film thickness of 2.0 mils.

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First Harrison Bank

MISCELLANEOUS METALS
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PART 4 - SUBMITTAL CHECK LIST

- A. Shop and setting drawings.

END OF SECTION 05 50 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete all rough carpentry work indicated, noted and detailed on drawings and specified herein including:
1. Framing, blocking and furring.
 2. Wood treatment.
 3. Fasteners in treated wood.
 4. Blocking as required for items such as casework, cabinets, toilet accessories, lockers, and any other items requiring wood blocking for support, bracing, mounting, and securing in place.

1.2 QUALITY ASSURANCE

- A. Grading Rules:
1. Lumber grading rules and wood species shall conform with Voluntary Product Standard PS-20. Grading rules of the following associations shall also apply to materials produced under their supervision.
 - a. Northeastern Lumber Manufacturer's Association, Inc. (NELMA).
 - b. Southern Pine Inspection Bureau (SPIB).
 - c. West Coast Lumber Inspection Bureau (WCLIB).
 - d. Western Wood Product Association (WWPA).
 2. Plywood shall conform to the following:
 - a. Softwood Plywood - Product Standard PS-1.
 - b. Hardwood Plywood - Product Standard PS-51.
- B. Grade Marks:
1. Identify all lumber and plywood by official grade mark.
 2. Lumber: Grade stamp to contain symbol of grading agency, mill number or name, grade of lumber, species or species grouping or combination designation, rules under which graded, where applicable and condition of seasoning at time of manufacture.
 - a. S-Dry: Maximum 15 percent moisture content.
 - b. MC-5 or KD: Maximum 15 percent moisture content.
 - c. Dense.
 3. Softwood Plywood: Appropriate grade trademark of the American Plywood Association.
 - a. Type, grade, class and identification index.
 - b. Inspection and testing agency mark.
 4. Hardwood Plywood: Appropriate grade mark of qualified inspection, testing, or grading mark.

C. Testing:

1. ASTM E 84, maximum 25 Flame Spread rating.

D. Requirements of Regulatory Agencies:

1. Fire Hazard Classification: Underwriter's Laboratories, Inc., for treated lumber and plywood.
2. Preservative Treated Lumber and Plywood: American Wood Preservers Bureau, Quality Mark.
3. Pressure Treated Material: American Wood Preserves Bureau Standards.
4. Span Tables: National Forest Products Association.
5. Working Stresses: Softwood Lumber, National Design Specification, National Forest products Association.

1.3 SUBMITTALS

A. Submit the following:

1. Treating Plant Certification:
Submit certification by treating plant stating chemicals and process used, net amount of salts retained, and conformance with applicable standards.
2. Preservative Treated Wood:
Submit certification for water-borne preservative that moisture content was reduced to 19 percent maximum, after treatment.
3. Fire Retardant Treatment:
Submit certification by treating plant that fire-retardant treatment materials comply with governing ordinances and that treatment will not bleed through finished surfaces.
4. Fasteners Product Data:
Submit manufacturer's published literature and product data sheets.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Immediately upon delivery to job site, place materials in area protected from weather.
- B. Store materials of minimum of 6" above ground on framework or blocking and cover with protective waterproof covering, providing adequate air circulation or ventilation.
- C. Do not store seasoned materials in wet or damp areas.
- D. Protect fire-retardant materials against high humidity and moisture during storage and erection.
- E. Protect sheet materials from corners breaking and surface damage.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber:

1. Dimension:
 - a. Specified lumber dimensions are nominal.
 - b. Actual dimensions conform to industry standards established by the American Lumber Standards Committee and the rules writing agencies.
2. Moisture Content:
 - a. 19 percent maximum at time of permanent closing of building or structure, for lumber 2" or less nominal thickness.
3. Surfacing:
 - a. Surface four sides (S4S), unless otherwise shown, or specified.
4. Framing Lumber:
 - a. 2" to 4" thick, 2" to 4" wide.
 - b. Any commercial softwood species, unless otherwise shown, or specified.
5. Miscellaneous Lumber:
 - a. Provide wood for support or attachment of other work including cant strips, bucks, nails, blocking, furring, grounds, stripping and similar members.
 - b. Provide lumber of sizes shown or specified, worked into shapes shown on Drawings.
 - c. 15 maximum moisture content for lumber items not specified to receive wood preservative treatment.
6. Grades:
 - a. General Framing: Standard and Better Grade.
 - b. Plates, Blocking, Bracing and nailers: Utility Grade.
 - c. Miscellaneous Lumber: Construction Grade.

B. Plywood:

1. Exterior graded plywood where indicated, or where edge or surface is permanently exposed to weather: B-B EXT-APA, graded for treatment where preservative treated plywood is indicated.
2. Plywood Backing Panel: For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels, APA C-D PLUGGED INT with exterior glue, thickness indicated, or if not otherwise indicated, 3/4".

C. Preservative Treated Wood:

1. Waterbourne Salt Preservatives for Painted, Stained or Exposed Natural Wood Products:
 - a. AWPB LP-2, above ground application.
 - b. AWPB LP-22, ground contact application.
2. Treat indicated items and the following:

- a. Wood sills, sleepers, blocking, furring, stripping, roofing, and similar concealed members in contact with masonry, concrete, or around windows and doors.
 - b. Use **MCA** (Micronized Copper Azole) preservative treatment only.
- D. Fasteners in Treated Wood:
 - 1. Shall be resistant to corrosion or be protected to resist corrosion.
 - 2. Where sacrificial coatings are applied to fasteners, a minimum coating thickness capable of protecting the fastener for the expected service life of the structure shall be provided. Provide manufacturer's product information, test results, and certifications to substantiate these claims.
 - 3. Coating weights for zinc-coated fasteners shall be in accordance with ASTM A153M or ASTM A641, Supplementary Requirements.
 - 4. Fasteners shall be one of the following:
 - a. Stainless steel.
 - b. Standard Single-dipped, Double-dipped, Hot-dipped, or zinc-coated galvanized steel.
 - c. Silicon bronze.
 - d. Copper.

PART 3 - EXECUTION

3.1 GENERAL

- A. Discard units of material with defects which might impair quality of work, and units which are too small to fabricate work with minimum joints or optimum joint arrangement.
- B. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
- C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.
- D. Use common wire nails except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required.

3.2 INSTALLATION

- A. Wood Grounds, Nailers, Blocking and Sleepers:
 - 1. Provide where shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached.
 - 2. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement. Do not use power driven anchors unless approved by Architect.

3. Provide permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.
 4. For renovation projects utilizing existing blocking, provide additional blocking as required if existing blocking is inadequate.
- B. Apply two brush coats of same preservative used in original treatment to all sawed or cut surfaces of treated lumber.

3.3 TEMPORARY WORK

- A. Provide temporary stairs, ramps, runways, ladders, etc., as required for the purpose of handling materials, personnel and access to the work and temporary exits from the building.

3.4 CUTTING, FITTING AND PATCHING

- A. Include all cutting, fitting and patching of work in connection with other trades which adjoin any part of this work.

PART 4 - SUBMITTAL CHECK LIST

- A. Treating plant certification.
- B. Preservative treatment certificate.
- C. Fasteners product data.

END OF SECTION 06 10 00

SECTION 06 17 53 - PREFABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Pre-engineered, prefabricated wood roof trusses, truss girders, truss bracing and bridging, and all connections, including those between the trusses and common building framing, as indicated on the Drawings and specified herein.
- B. Drawings indicate overall intent, and may include profiles and dimensions of trusses for communication of intent only.

1.2 QUALITY ASSURANCE

- A. Conform to the following design standards:
 - 1. "National Design Specification for Wood Construction", published by the National Forest Products Association.
 - 2. "Design Specification for Metal Plate Connected Wood Trusses", published by the Truss Plate Institute (TPI).
 - 3. "American Institute for Timber Construction" (AITC).
 - 4. All applicable state and local building codes.
- B. Provide trusses fabricated in accordance with designs prepared under the supervision and bearing the seal of a Professional Structural Engineer, registered in the state of project location.
- C. Conform to the following Fabrication and Erection Standards:
 - 1. "Bracing Wood Trusses", published by the TPI.
 - 2. "Quality Control Manual", published by TPI.
- D. Design trusses to the following loads and requirements, unless indicated otherwise on the Drawings:
 - 1. Live Load Deflection Criteria = L/240 maximum.
 - 2. Total Load Deflection Criteria = L/180 maximum.
 - 3. Roof: Top Chord Live Load = 20 psf.
 - 4. Roof: Top Chord Dead Load = 20 psf.
 - 5. Roof: Bottom Chord Dead Load = 10 psf.
 - 6. Wind = 90 mph.
 - 7. Exposure = C.
 - 8. Design all truss connector plates using an extra safety factor of 1.20 in addition to the standard design requirements listed above.
 - 9. Camber Trusses to equal the dead load deflection.

1.3 SUBMITTALS

A. Shop Drawings:

1. Details and elevations on the Drawings are diagrammatic and are intended to span the basic intent of the truss requirements for design by the truss manufacturer.
2. Submit shop drawings for review of intent, profiles and overall dimensions to verify conformance with the design intent, and not for structural capability of design.
3. Indicate length, depth, bearing points, pitch, span, profile, quantity, components, grades, configuration, required openings and critical dimensions.
4. Prepare drawings for field erection. Mark and locate all trusses on Drawings. Indicate all bracing and anchoring.

B. Engineer's Certification:

1. Shop drawings and design load calculations shall be prepared, stamped and certified by a Structural Engineer registered to practice in the State of the project location.
2. Structural Engineer shall be hired by the truss manufacturer and shall oversee design of the structural requirements, truss components and connection members.
3. Design truss and wood framing connections in accordance with all requirements of the "Truss Plate Institute", the "National Forest Products Association" and the "American Institute for Timber Construction".
4. Design calculations shall indicate vertical displacement due to loading conditions.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Handle prefabricated trusses to avoid damage, and in accordance with manufacturer's instructions.
- B. Protect trusses from construction operations.
- C. Replace damaged trusses. Do not attempt to repair damaged prefabricated trusses.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber:

1. Species, and grade as required for design load.
2. All lumber for chords and webs to be No. 2 or Better. No. 3 lumber is NOT permitted.
3. Nominal thickness: 2 inches.
4. Nominal width: as required for design load.

- B. Metal Connector Plates:
 - 1. Minimum thickness: 0.036 inches.
 - 2. ASTM A446, Grade A.
 - 3. Hot Dip Galvanized per ASTM A525, G60.
- C. Connections between wood trusses and common lumber framing shall be made with the appropriate "Simpson" Strong-Tie anchor and connector.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Field verify all dimensions and conditions prior to fabrication.
- B. Wood trusses shall NOT be assumed structurally stable until all members are in place. Any use of the partially erected framework for temporary support of any kind shall be done only at the sole risk of the Contractor.

3.2 FABRICATION

- A. Fabricate trusses with wood chords and metal or wood webs in accordance with designs certified by the Structural Engineer.
- B. Fabricate and install metal connector plates in accordance with latest edition of "Truss Plate Institute" Standards and Procedures.
- C. Fabricate and install truss and wood framing connections in accordance with all requirements of the "Truss Plate Institute", the "National Forest Products Association" and the "American Institute for Timber Construction".
- D. Multiple trusses, double or triple trusses, shall be utilized, as required, to maintain deflection limits.

3.3 ERECTION

- A. Install trusses in accordance with manufacturer's instructions, recommendations and design.
- B. Hoist trusses into position so as to prevent damage and minimize out-of-plane bending.
- C. Install temporary horizontal and cross bracing to hold trusses plumb and in safe.
- D. Install permanent bracing and related components prior to application of loads to trusses.
- E. Restrict construction loads to prevent over stressing of truss members.
- F. Do not cut or remove truss members or metal connector plates.

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PART 4 - SUBMITTAL CHECK LIST

- A. Shop Drawings.
- B. Engineer's Certification.

END OF SECTION 06 17 53

SECTION 06 20 00 - FINISH CARPENTRY

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Solid Surface window sills throughout the project as indicated on the Drawings.

1.2 QUALITY ASSURANCE

- A. Comply with the latest edition of the Architectural Woodwork Standards (AWS) "Quality Standards". References to Premium, Custom, or Economy in this specification are to be as defined in this publication.
- B. Factory mark each piece of lumber and plywood with grading information, except for surfaces to receive transparent finish.
- C. Mark each unit of fire-retardant treated lumber and plywood with Underwriter's Laboratory Classification marking.

1.3 SUBMITTALS

- A. Submit the following:
 - 1. Shop Drawings of all finish carpentry items of sufficient detail and scale to show compliance with design intent and specified quality grades.
 - 2. Samples of all finish materials for colors, patterns and finishes as specified. For colors, patterns and finishes not specified, submit samples of manufacturer's entire selection for selection by Architect.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Protect products during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver products, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate materials have been completed in installation areas.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Solid Surface Window Sills:
 - 1. Acceptable Manufacturers and Products:
 - a. "Dupont", "Corian".
 - b. "Wilsonart", "Gibraltar".

- c. "Formica", "Formica Solid Surfacing".
 - d. "Meganite", "Meganite".
 - e. "Avonite Surfaces", "Avonite".
 - f. "LG Hausys", "Acrylic Solid Surface".
 - g. "Hanwha L&C", "Hanex Solid Surface".
 2. 3/4" total sill thickness provided from one of the following, depending on color availability:
 - a. 3/4" thick solid surface material.
 - b. 1/4" thick solid surface material laminated atop 1/2" plywood or hardboard with edge bandings of 3/4" solid surface material.
 3. Provide 1/2" thick apron below entire exposed edge of sill, 2" deep unless indicated otherwise.
 4. All sills and aprons to have eased exposed edges.
 5. Extend sill 1/2" beyond face of apron, unless indicated otherwise.
 6. Color as indicated on Drawings, or to be selected by Architect from manufacturer's entire selection.
- B. Particle Board:
1. Medium Density, Type 1-M-2.
 2. Thickness as indicated on the Drawings. If not indicated, provide 3/4" standard.
- C. Fasteners and Anchors:
1. Size and type as required for each use.
 2. Provide non-ferrous or hot-dip galvanized anchors and fasteners for all exterior applications.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Field measure openings for proper fit of window sills.

3.2 INSTALLATION

- A. Install work in as large sizes as practical, in order to minimize the number of joints. Install trim using full length pieces from largest length lumber available. Stagger joints in adjacent and related members.
- B. Install work plumb, level, true and straight. Shim as required using concealed shims.
- C. Scribe and cut work to fit adjoining surfaces.
- D. Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where pre-finished matching fastener heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush with surface, so that nail is not noticeable after surface is painted or stained.

3.3 ADJUSTING AND CLEANING

- A. Repair or replace defective finish carpentry work to eliminate functional and visual defects.

3.4 PROTECTION

- A. Protect all work from damage until time of substantial completion.
- B. Maintain conditions necessary to prevent deterioration of work.
- C. Repair or replace damaged work and finishes.

PART 4 - SUBMITTAL CHECK LIST

- A. Shop Drawings.
- B. Samples.

END OF SECTION 06 20 00

SECTION 06 40 00 - ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Architectural Woodwork as shown on the Drawings and specified herein, including:

1. Custom Cabinets and Casework:
 - a. Wood Cabinets - Plastic Laminate Faces.
 - b. Quartz Countertops For Custom Cabinets and Casework.
 - c. Solid Surface Countertops For Custom Cabinets and Casework.
 - d. Wood shelves

1.2 QUALIFICATIONS

A. Supplier's Qualifications:

1. Manufacturers of Plastic Laminate Cabinets and Casework should be pre-qualified prior to bidding.
2. Shop of manufacturer should be certified by the Architectural Woodwork Standards (AWS), and be capable of providing proof of such certification upon request.
3. Manufacturers wishing to be included on the pre-qualified list herein shall submit qualifications in writing to the Architect no later than ten (10) days prior to the bid.

B. Pre-qualified Manufacturers of Plastic Laminate Cabinets and Casework:

1. Adams Cabinetry and Installations.
2. Classic Cabinets & Millwork.
3. Corman and Associates, Inc.
4. Euronique, Inc.
5. Four Stone Mill and Casework.
6. Meyer Custom Woodworking.
7. P.R. Bean Company.
8. Smith Laminating, Inc.
9. Southern Cabinetry, Inc.
10. Stidham Cabinet, Inc.

1.3 QUALITY ASSURANCE

- A. Comply with the latest edition of the Architectural Woodwork Standards (AWS) "Quality Standards". References to Premium, Custom, or Economy in this specification are to be as defined in this publication.
- B. Provide items and work of the quality grade indicated, or if not indicated, of Custom grade.

- C. Provide items and installation of straight, flat, level, plumb, and true quality and craftsmanship. Items provided that create an installation not acceptable for these reasons, or otherwise deemed unacceptable for purposes of aesthetics or maintenance, shall be removed and replaced by the Contractor without additional costs to the Owner. Final determination shall be made by the Architect.
- D. Any inconsistencies or irregularities in the surface or product will be cause for rejection. All rejected products shall be removed and replaced with new at no additional cost to the Owner. The evaluation of acceptance and rejection is at the sole discretion of the Architect.

1.4 SUBMITTALS

- A. Samples:
 - 1. Complete range of manufacturer's standard finishes where colors or finishes are not specified.
 - 2. Samples of specified items only, where colors or finishes have been indicated.
 - 3. Samples of each type, material, color, pattern and finish of all countertops and surfaces specified.
- B. Shop Drawings:
 - 1. Field measurements shall be taken to verify that architectural woodwork, cabinets and casework will fit into designed space. Entryways, corridors, and door openings shall be verified to ensure that the equipment be manufactured in a manner to permit it to be moved through properly into place.
 - 2. Show layout of architectural woodwork, cabinets and casework with product reference numbers, details of construction, dimensions, elevations, rough-ins, materials, finishes, hardware, and accessories.
 - 3. Reference Architect's nomenclature of product identification as indicated on the Drawings.
 - 4. Shop drawings on all architectural woodwork items, of sufficient detail and scale to determine compliance with design intent and specified quality grades.
 - 5. Manufacturer's descriptive literature of specialty items not manufactured by the architectural wood worker.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver woodwork, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas.
- C. Deliver architectural woodwork, cabinets and casework as needed for immediate installation whenever possible. Any items delivered ahead of time for installation shall be stored by Contractor until project areas are ready for installation.

1.6 PROJECT CONDITIONS

- A. Conditioning: Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

- B. Maintain temperature and humidity in installation area as required to maintain a moisture content of installed woodwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period.

1.7 WARRANTY

- A. Architectural woodwork, cabinets and casework contractor shall guarantee to replace or repair, at no expense to the Owner, all materials of this contract found to be defective within one year of acceptance (Substantial Completion), due to defective materials and/or workmanship.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Interior Wood for Transparent Finish:
 - 1. Natural Birch, AWS Premium Grade.
 - 2. Plain Sliced.
- B. Veneer Wood for Transparent Finish:
 - 1. Natural Birch, AWS Premium Grade.
 - 2. Plain Sliced.
 - 3. Veneer thickness shall not be less than 1/20 in. before sanding.
 - 4. Veneer matching to be determined by fabricator, for best visual effect, depending upon flitch width and grain character.
 - 5. Refer any questions and about best visual effect to Architect for resolution as work progresses.
- C. Hardwood Plywood:
 - 1. Product Standard PS 51.
- D. Softwood Plywood:
 - 1. Product Standard PS 1.
- E. Plastic Laminate:
 - 1. Acceptable Manufacturers:
 - a. "Wilsonart"
 - 2. Comply with NEMA LD-3 for type, thickness, color, pattern, and finish as indicated for each application.
 - 3. Provide high pressure laminate in grades indicated for the following types of surfaces:
 - a. Horizontal Surfaces High-pressure decorative laminate HGS-50 (0.050").
 - b. Vertical Surfaces: High-pressure decorative laminate VGS-28 (0.028").
 - c. Exposed Cabinet Body Exterior: High-pressure decorative laminate VGS-28 (0.028").

- d. Door and Drawer Fronts: High-pressure decorative laminate VGS-28 (0.028").
 - e. Exposed Cabinet Body Interior: High-pressure decorative laminate VGS-28 (0.028").
 - f. Semi-Exposed Cabinet Body Interior: Thermally-fused melamine laminate with CL-20 cabinet liner at surface required to achieve true balanced construction, manufacturer's standard "white" in color.
 - g. Interior Concealed Surfaces: Thermally-fused melamine laminate, manufacturer's standard "white" in color.
- 4. Balanced construction of both faces of surfaces is required.
- 5. Laminate grain patterns are to run vertically and be vertically matched within each unit.
- F. Solid Surfacing Material:
 - 1. Acceptable Manufacturers and Products:
 - a. "Dupont", "Corian".
 - 2. 1/2" thick for countertops, installed over particleboard backer, for total thickness of 1".
 - 3. 1/2" thick for edge banding, and to provide a face depth of 1", unless indicated otherwise.
 - 4. 1/2" thick for backsplashes and end splashes, 4" high unless otherwise noted.
 - 5. 1/2" thick for window sills, unless otherwise noted.
- G. Quartz Material:
 - 1. Acceptable Manufacturers and Products:
 - a. "Corian Quartz".
 - 2. 1-1/8" thick for countertops.
 - 3. 3/4" thick for backsplashes and end splashes, 4" high unless otherwise noted.
 - 4. Edge Profile: Straight bevel, Basic Eased, Bullnose, Ogee, Mitred.
- H. Particle Board:
 - 1. 47 pound density, non-telegraphing.
 - 2. 3/4" thick, medium density particleboard, Type 1-M-2.
 - 3. 1/2" thick minimum, medium density particleboard, Type 1-M-2, under solid surfacing countertops.
- I. Accessories:
 - 1. Fillers, tops, end and side closures; finish to match adjacent cases, cabinets and countertops.
 - 2. Finished back and end panels as required or indicated.
 - 3. Back splashes on all countertops. End splashes only as specified.
- J. Plastic Laminate Shelving:
 - 1. Fully adjustable, typically.
 - 2. Fixed where required for unit stability and/or positive door latching.
 - 3. 1" actual thickness over 36" wide, 3/4" actual thickness less than 36" wide.
- K. Edge Trim:

1. Material:
 - a. 1mm (.020" actual) rigid PVC banding, stain finish, machine applied.
 - b. 3mm rigid PVC banding, stain finish, machine applied with 3mm radius edge profile.
2. 3mm PVC banding at edges of doors and drawers.
3. 3mm PVC banding at edges of countertops, including splashes, typical.
4. 1mm PVC banding at edges of shelves, front and back.
5. 1mm PVC banding at all other case and leading edges.

L. Fasteners and Anchors:

1. Size and type as required for each use.
2. Provide non-ferrous or hot-dip galvanized anchors and fasteners for all exterior applications.

M. Colors:

1. Colors as selected from manufacturer's entire selection, no limit on number of colors selected.
2. If colors are indicated on the Drawings, colors and patterns must be matched.
3. For purposes of color selections, countertops shall include all splashes, aprons, supports and cleats where no base units are provided, unless noted otherwise.
4. For purposes of color selections, all fillers and panels shall match adjacent exposed cabinet faces.

2.2 HARDWARE

- A. Pulls for drawers and doors shall be of clean, modern design offering a comfortable hand grip and shall attach to drawer or door with machine screws on 4" centers.
Pulls shall be of extruded aluminum with satin lacquer finish.
All pulls shall be centered on all drawer fronts.
- B. Latching assembly for tall case double swinging doors shall consist of an eccentric plate operating two 1/8" x 5/8" plated vertically operating locking bars. Each bar shall operate through an extruded nylon guide and, when locked, shall engage a strike plate providing positive latching for the left hand door.
The lock attached to the right hand door shall operate a bolt which, when locked, shall overlap the left hand door providing secure locking. Single doors shall be locked to case sides.
- C. Hinges shall be five knuckle institutional type heavy-duty hinges, concealed.
Hinges shall be 2-1/2" chrome, satin finish.
Hinges are to be mounted to door and case with not less than three screws per wing.
- D. Catches shall be provided on swinging doors and shall be a spring-loaded nylon roller type.
- E. Provide cork, plastic, or rubber type silencers on all drawers and doors.
- F. Door and Drawer Locks:
 1. Locks shall be furnished on all doors and drawers where noted on Drawings.
 2. Locks shall be standard disc tumbler with removable core (cam style), master keyed and furnished with two keys per lock.

3. Locks used for double door applications shall be capable of securing both doors simultaneously without the need for additional elbow or deadbolt catches or bolt on the passive door.
4. Furnished with two keys per lock. Master key as required.
5. Unless otherwise specified, key casework per the following requirements:
 - a. All spaces shall have all doors and drawers keyed alike within entire room.
 - b. Provide grandmaster key to operate all locks of all master keys for all spaces.
- G. Provide epoxy coated steel drawer slides with nylon rollers and self-closing feature at all standard and file drawers. Drawer slide load capacity to be 100 lb. static load rating, minimum and 150 lb. static load rating, minimum at all file drawers. Provide with full extension of drawer body beyond the face of the cabinet; 3/4 extension slides are not acceptable.
- H. Drawer stops shall be provided on all drawers to prevent inadvertent removal. Stops shall be automatic type, zinc plated steel.
- I. Shelf supports shall be die-formed to insert into pre-drilled holes on interior of cases and cabinets. Supports shall provide shelf adjustment on 32 mm centers. Shelf supports shall be plated steel. Shelves longer than 48" shall have additional support at center and at 24" maximum spacing otherwise.
- J. Shelf brackets and standards shall be installed so as to set standards flush with the finished interior surfaces of cases and cabinets. Heavy-duty slotted recessed metal standards shall provide shelf adjustment on maximum 1" centers. Shelf support brackets shall be plated steel and designed specifically for type of shelf material. Shelves longer than 48" shall have additional support at center and at 24" maximum spacing otherwise.
- K. Chain stops shall be provided at the top of all doors to all tall cabinets. Provide chain stops at the top of all doors to all base and wall cabinets that open directly into a wall surface or obstruction. Finish of stops to match hinges.
- L. Countertop Brackets
 1. "US Futaba" USF-72531 12' x 18" Bracket. Finish: White or Black
 2. "US Futaba" USF-72531 18" x 24" Bracket. Finish: White or Black
 3. "US Futaba" USF-72531 24" x 29" Bracket. Finish: White or Black

2.3 FABRICATION

- A. Custom Cabinets and Casework:
 1. Fabricate in compliance with AWS Premium Grade for all cases and cabinets.
 2. Fabricate in compliance with AWS Premium Grade for plastic laminated tops.
 3. Conform to Full Flush Overlay design details for all doors and drawers.
 4. Fabricate in shop in largest units possible.
 5. Machine for all hardware in shop.
- B. Joinery:

1. Handwrap fluted dowel construction.
2. 8mm minimum.
3. Doweled and glued.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Field measure all areas to receive architectural woodwork prior to fabrication. Provide any necessary closures and trim to fit the items to enclosing walls. Provide other trades with information necessary for proper completion of related work.
- B. Not all details of millwork are shown on the Drawings. Utilize the most advantageous manufacturing processed to achieve the quality and design intent indicated.
- C. Install architectural woodwork only after flooring and wet work have been finished and proper heat and ventilation have been provided to maintain a uniform heat with not more than 50 percent relative humidity. Allow 7 days of storage of architectural woodwork in area in which it is to be installed to permit wood to reach optimum moisture content.
- D. All laminated doors and drawers to be laminated all sides with GP-50, 0.50" thick.

3.2 INSTALLATION

- A. Exercise care to avoid damage to finished surfaces during handling and erection. Repair all damaged surfaces and blemishes arising from such operation. Replace items which cannot be satisfactorily repaired.
- B. Install paneling in correct position with concealed mechanical fastenings. Provide a minimum of nine (9) mechanical fasteners per wall panel unit, installed in such a way as to draw the panel uniformly tight to the supporting framework.
- C. Install all scribe strips accurately fitted to adjacent surfaces and securely anchored in position.
- D. Field modify architectural woodwork to accommodate conduits, piping, etc., in a neat and workmanlike manner.
- E. Attach all casework to floors and walls and anchor by concealed bolts or wood screws into inserts on floors and grounds, blocking, and nailers on walls. Provide all grounds, blocking, and nailers as necessary for all items. Trim and finish cabinets with scribe members for a neat and finished installation. Furnish hardware as specified. Equip each cabinet door with cabinet hinges, silencers, magnetic catch and pull. Mount each drawer on drawer slides and provide with a pull and silencers. Install adjustable standards and supports for adjustable shelves.
- F. Install casework so that doors will fit openings properly and be accurately aligned. Adjust hardware to center doors and provide unencumbered operation.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork properly to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean hardware, lubricate and make final adjustments for proper operation.
- C. Clean all woodwork and cabinets on exposed and semi-exposed surfaces, inside and out. Touch-up shop-applied finishes to restore damaged or soiled areas. Clean all plastic laminate with mild abrasive cleaner and polish with "Cabinet Magic" or similar laminate polish product.
- D. Complete the finishing work specified as work of this section, to whatever extent not completed at shop or prior to installation of woodwork.

3.4 PROTECTION

- A. Protect architectural woodwork so that it is without damage or deterioration at time of substantial completion.

PART 4 - SUBMITTAL CHECK LIST

- A. Samples.
- B. Shop Drawings.
- C. Manufacturer's Literature.

END OF SECTION 06 40 00

SECTION 07 01 50.19 – PREPARATION FOR REROOFING

PART 1 - GENERAL

1.01 GENERAL

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

1.02 SUMMARY

- A. Section Includes:
 - 1. Full tear-off of roof system at areas indicated on Drawings.
 - 2. Removal of flashings and counterflashings.

1.03 DEFINITIONS

- A. Full Roof Tear-Off: Removal of existing roofing system down to existing roof sheathing.
- B. OSB: Oriented strand board.
- C. Roofing Terminology: Definitions in ASTM D1079 and glossary of NRCA's "THE NRCA Roofing Manual Membrane Roof Systems" apply to work of this Section.

1.04 FIELD CONDITIONS

- A. Existing Roofing System: Asphalt Shingles
- B. Protect building to be reroofed, adjacent buildings, automobiles, trucks, walkways, site improvements, exterior plantings and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors and other adjacent occupied or used facilities.
- D. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.
 - 1. Construction Drawings and Project Manual for existing roofing system are provided for Contractor's convenience and information, but they are not a warranty of existing conditions. They are intended to supplement, rather than, serve in lieu of Contractor's own investigations. Contractor is responsible for conclusions derived from existing documents.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit work to proceed without water entering existing roofing system or building.
 - 1. Remove only as much roofing in one day as can be made watertight in the same day.

- F. Hazardous Materials: It is not expected that hazardous materials, such as asbestos-containing materials, will be encountered in the work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb. Immediately notify Architect and Owner.
 - a. Hazardous materials will be removed by Owner under a separate contract.

PART 2 - PRODUCTS

2.01 INFILL AND REPLACEMENT MATERIALS

- A. New roofing materials are specified in Section 07 31 00 Shingles, unless otherwise indicated.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.
- B. During removal operations, have sufficient and suitable materials on site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- C. Contractor is responsible for protecting existing roof penetrations to remain.

3.02 ROOF TEAR-OFF

- A. Notify General Contractor each day of extent of roof tear-off proposed for that day.
- B. Lower removed roofing materials to ground using acceptable means of removing materials from roof areas.
- C. Full Roof Tear-off: Remove existing roofing and other roofing system components down to the existing roof deck as indicated on Drawings.
 - 1. Remove shingles and underlayment down to roof sheathing.
 - 2. Remove eave flashings.
 - 3. Remove flashings at pipes and other penetrations.

3.03 DECK PREPARATION

- A. The General Contractor shall inspect wood sheathing after tear-off of roofing.
- B. If deck surface is unsuitable for receiving new roofing or if structural integrity of desk is suspect, document any defective conditions and immediately notify Architect. Defective materials will be removed and replaced.

3.04 EAVE FLASHING REMOVAL

- A. Remove eave flashings if Alternate No. 2 – Roofing Replacement is accepted.
 - 1. Clean substrates of contaminants, such as; asphalt, sheet materials, dirt and debris.
- B. Do not damage metal counterflashings that are to remain.
- C. Inspect eaves, wood blocking, and nailers. Immediately notify Architect of any items that have deteriorated. Defective materials will be removed and replaced.

3.05 DISPOSAL

- A. Collect demolished materials and place in containers.
 - 1. Promptly dispose of demolished materials.
 - 2. Do not allow demolished materials to accumulate on site.
 - 3. Storage or sale of demolished items or materials on site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 07 01 50.19

SECTION 07 21 00 - INSULATION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Extent of insulation work is indicated on the Drawings and specified herein.
- B. Applications of insulation specified in this section include the following:
 - 1. Batt/Blanket Thermal Insulation.
 - 2. Batt/Blanket Sound Insulation.
 - 3. Interior Vapor Retarder.

1.02 QUALITY ASSURANCE

- A. Thermal Conductivity:

Thicknesses shown are for thermal conductivity (k-value at 75°F) specified for each material. Provide adjusted thicknesses as directed for equivalent use of material having a different thermal conductivity. Where insulation is identified by "R" value, provide appropriate thickness.
- B. Fire and Insurance Ratings:

Comply with fire-resistance, flammability and insurance ratings indicated, and comply with governing regulations as interpreted by authorities.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's specifications and installation instructions for each type of insulation required.
 - 2. Material Safety and Data Sheets (MSDS).

1.04 DELIVERY, STORAGE AND HANDLING

- A. Do not allow insulation materials to become wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Batt/Blanket Thermal Insulation (formaldehyde, acrylic and dye free):

1. Unfaced Batts:
 - a. Provide accepted products from one of the following acceptable manufacturers:
 - 1.) "Owens Corning".
 - 2.) "USG".
 - 3.) "Johns Manville".
 - 4.) "CertainTeed".
 - b. Fiberglass Batts.
 - c. Continuous rolls in width of 16" or 24", as required to accommodate building component spacing.
 - d. Thickness to completely fill stud space and also provide R-value indicated on drawings.
If not indicated, provide either 3-1/2" thick R-11 minimum or 6" thick R-19 minimum.
 - e. Provide unfaced batts for all batt/blanket thermal insulation, unless otherwise indicated.
2. Kraft Faced Batts:
 - a. Use of Kraft Faced Batts is NOT permitted.
3. Foil Faced Batts:
 - a. Provide accepted products from one of the following acceptable manufacturers:
 - 1.) "Owens Corning".
 - 2.) "USG".
 - 3.) "Johns Manville".
 - 4.) "CertainTeed".
 - b. Fiberglass Batts.
 - c. Continuous rolls in width of 16" or 24", as required to accommodate building component spacing.
 - d. Foil scrim vapor barrier facing, Class A rated, Type FSK-25.
 - e. Thickness to provide R-value indicated on drawings, or if not indicated, 3-1/2" thick, R-11.

B. Batt/Blanket Sound Insulation (formaldehyde, acrylic and dye free):

1. Fiberglass Batts.
 - a. Provide one of the following approved products:
 - 1.) "Owens Corning" Sound Attenuation Batts Fiber Glass.
 - b. Unfaced.
 - c. Continuous rolls in width of 16" or 24", as required to accommodate building component spacing.
 - d. Thickness to completely fill stud space.
At a minimum, provide 3-1/2" thickness to provide NRC value of 1.00 minimum.
 - e. Friction fit between studs at partition walls, or as indicated on the drawings.

C. Interior Vapor Retarder:

1. Provide one of the following approved products:
 - a. "Certainteed", MemBrain Smart Vapor Retarder.
2. Vapor Permeance:
 - a. < 1.0 perm (ASTM E96, Dessicant Method)
 - b. > 10.0 perms (ASTM E96, Water Method)
3. Fire Hazard (ASTM E 84)
 - a. Flame spread: 20 max.
 - b. Smoke Developed: 55 max.
4. Fungi Resistance
 - a. No growth (ASTM C1338)

D. Miscellaneous Materials:

1. Adhesive for bonding insulating to be type recommended by insulation manufacturer and complying with fire-resistance requirements.
2. Mechanical anchors to be type and size shown, or if not shown, as recommended by insulation manufacturer for type of application and condition of substrate.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Installer must examine substrate and conditions under which insulation work is to be performed and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with insulation work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General:

1. Comply with manufacturer's instructions for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.
2. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation.
3. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.
4. For horizontal floor or roof applications, provide separate support system as required to hold insulation in its intended location. If not otherwise indicated, provide continuous single cables attached to bottom chord of trusses at 24" o.c. spacing to allow access to above insulation as desired. Chicken wire or other method of support shall be permitted as approved by the Architect.

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SUBMITTAL CHECK LIST

1. Product Data.

END OF SECTION 07 21 00

SECTION 07 21 19 - FOAMED-IN-PLACE INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Closed-cell spray polyurethane foam.

1.2 ACTION SUBMITTALS

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

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product test reports.
- C. Research reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 CLOSED-CELL SPRAY POLYURETHANE FOAM

- A. Closed-Cell Spray Polyurethane Foam: ASTM C 1029, Type II, minimum density of 2.0 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.7.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Corporation; Spraytite 81206 SPF.
 - b. BASF Corporation; Walltite.
 - c. Henry Company; Permax 2.0X
 - d. Huntsman Building Solutions; HeatLok HFO Pro.
 - e. Icynene Inc.; ProSeal.
 - f. Johns Manville; JM Corebond MCS.
 - g. NCFI; InsulBloc.
 - h. Polymaster, Inc.; InsulBloc.

2. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency.
 2. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 3. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
 4. Water Absorption: Maximum 2.0 percent per ASTM D 2842.
- B. Closed-Cell Gap-Sealing Insulation: Two-part polyurethane foam for filling cavities, penetrations, gaps, and similar spaces.
1. Products: One of the following:
 - a. Dow Chemical Company (The); Froth-Pak.
 - b. Polymaster, Inc.; Handi-Foam.
 2. Thermal Resistance: Minimum 6.6 per ASTM C 518 at 90 days.
 3. Fire Resistance: Maximum flame spread of 25 and smoke developed of 450 when tested per ASTM E 84.
 4. Nominal Density: 1.75 lb/cu. ft..
- C. Thermal Barrier Coating: Sprayed cellulose thermal barrier.
1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Amerrock Products; FireStop TB.
 - b. Flame Seal Products, Inc.; Flame Seal-TB.
 - c. International Cellulose Corporation; Ure-K.
 - d. International Fireproof Technology Inc.; DC315.
 2. Color: As selected from manufacturer's full range.
 3. Passes when tested in accordance with UBC 26-2 Test Method for the Evaluation of Thermal Barriers, ASTM E 119.
 4. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.2 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by insulation manufacturer where required for adhesion of insulation to substrates.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Spray insulation to envelop entire area to be insulated and fill voids.
- C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.

1. Total Thickness: 1-1/2" unless indicated otherwise.
- D. Framed Construction: Install into cavities formed by framing members to achieve thickness indicated on Drawings.
- E. Miscellaneous Voids: Apply according to manufacturer's written instructions.
- F. Thermal Barrier:
 1. Spray-apply over any foamed-in-place insulation that will not be covered by gypsum board.
 2. Apply in minimum thickness as recommended by manufacturer.

END OF SECTION 07 21 19

SECTION 07 25 00 - WEATHER BARRIERS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Weather Barrier Membrane / Air Infiltration Barrier.
- B. Seam Tape.
- C. Flashing.
- D. Fastener.

1.02 REFERENCES

- A. ASTM International
 - 1. ASTM C920; Standard Specification for Elastomeric Joint Sealants
 - 2. ASTM C1193; Standard Guide for Use of Joint Sealants
 - 3. ASTM D882; Test Method for Tensile Properties of Thin Plastic Sheet
 - 4. ASTM D1117; Standard Guide for Evaluating Non-woven Fabrics
 - 5. ASTM E84; Test Method for Surface Burning Characteristics of Building Materials
 - 6. ASTM E96; Test Method for Water Vapor Transmission of Materials
 - 7. ASTM E1677; Specification for Air Retarder Material or System for Framed Building Walls
 - 8. ASTM E2178; Test Method for Air Permeance of Building Materials
 - 9. ASTM E2357; Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- B. AATCC – American Association of Textile Chemists and Colorists
 - 1. Test Method 127 Water Resistance: Hydrostatic Pressure Test
- C. TAPPI
 - 1. Test Method T-410; Grams of Paper and Paperboard (Weight per Unit Area)
 - 2. Test Method T-460; Air Resistance (Gurley Hill Method)

1.03 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures
- B. Product Data: Submit manufacturer current technical literature for each component.
- C. Samples: Weather Barrier Membrane, minimum 8-1/2 inches by 11 inch.
- D. Quality Assurance Submittals

1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.
2. Manufacturer Instructions: Provide manufacturer's written installation instructions.
3. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier assembly installation.

E. Closeout Submittals

1. Refer to Section 01 78 00 Closeout Submittals.
2. Weather Barrier Warranty: Manufacturer's executed warranty form with authorized signatures and endorsements indicating date of Substantial Completion.

1.04 QUALITY ASSURANCE

A. Qualifications

1. Installer shall have experience with installation of weather barrier assemblies under similar conditions.
2. Installation shall be in accordance with weather barrier manufacturer's installation guidelines and recommendations.
3. Source Limitations: Provide weather barrier and accessory materials produced by single manufacturer.

B. Mock-up

1. Install mock-up using approved weather barrier assembly including fasteners, flashing, tape and related accessories per manufacturer's current printed instructions and recommendations.
 - a. Mock-up size: 10 feet by 10 feet
 - b. Mock-up Substrate: Match wall assembly construction, including window opening.
 - c. Mock-up may remain as part of the work if approved by Architect.
 - d. Re-work and re-construct mock-up as necessary to meet Architect approval.
2. Contact manufacturer's designated representative prior to weather barrier assembly installation, to perform required mock-up visual inspection and analysis as required for warranty.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 65 00 Product Delivery and Handling.
- B. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store weather barrier materials as recommended by weather barrier manufacturer.
- D. Provide tarps as required. Manufacturer's shrink wrap alone is not sufficient protection.

1.06 SCHEDULING

- A. Review requirements for sequencing of installation of weather barrier assembly with installation of windows, doors, louvers and flashings to provide a weather-tight barrier assembly.
- B. Schedule installation of exterior cladding such that weather barrier is not directly exposed to elements for more than 60 days. Where cladding is delayed, provide inspection and repair of exposed weather barrier as required.

1.07 WARRANTY

- A. Refer to Section 01 78 00-Closeout Submittals.
- B. Special Warranty
 - 1. Special weather-barrier manufacturer's warranty for weather barrier for a period of ten (10) years from date of final weather barrier installation.
 - 2. Pre-installation meetings and jobsite observations by weather barrier manufacturer for warranty is required prior to assembly installation.
 - 3. Warranty Areas: Entire building.

PART 2 – PRODUCTS

2.01 MANUFACTURER

- A. DuPont; 4417 Lancaster Pike, Chestnut Run Plaza 728, Wilmington, DE 19805; 1-800-44-TYVEK (8-9835); <http://www.construction.tyvek.com>

2.02 MATERIALS

Basis of Design: spunbonded polyolefin, non-woven, non-perforated, weather barrier is based upon DuPont™ Tyvek® CommercialWrap® and related assembly components.

Performance Characteristics:

- 1. Air Penetration: 0.001 cfm/ft² at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677. ≤0.04 cfm/ft² at 75 Pa, when tested in accordance with ASTM E2357.
- 2. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B.
- 3. Water Penetration Resistance: Minimum 280 cm when tested in accordance with AATCC Test Method 127.
- 4. Basis Weight: Minimum 2.7 oz/yd², when tested in accordance with TAPPI Test Method T-410.
- 5. Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.
- 6. Tensile Strength: Minimum 38/35 lbs/in., when tested in accordance with ASTM D882, Method A.

7. Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117.
8. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84. Flame Spread: 10, Smoke Developed: 10.

2.02 ACCESSORIES

- A. Seam Tape: As recommended by the weather barrier manufacturer.
- B. Fasteners. Provide the following as required for each type of construction:
 1. WoodFrameConstruction:
Nail Caps: #4 nails with large 1-inch plastic cap fasteners, or 1-inch plastic cap staples with leg length sufficient to achieve a minimum penetration of 5/8-inch into the wood stud.
- C. Sealants
 1. Provide sealants that comply with ASTM C920, elastomeric polymer sealant to maintain watertight conditions.
 2. Products: Sealants recommended by the weather barrier manufacturer.
- D. Adhesives:
 1. Provide adhesive recommended by weather barrier manufacturer.
 2. Products: Adhesives recommend by the weather barrier manufacturer.
- E. Primers:
 1. Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.
 2. Products: Primers recommended by the flashing manufacturer.
- F. Flashing
 1. Flexible membrane flashing materials for window openings and penetrations recommended by manufacturer.
 2. Straight flashing membrane materials for flashing windows and doors and sealing penetrations such as masonry ties, etc. recommended by manufacturer.
 3. Thru-Wall flashing membrane materials for flashing at changes in direction or elevation (shelf angles, foundations, etc.) and at transitions between different assembly materials.
 4. Preformed Inside and Outside Corners and End Dams: Preformed three-dimensional shapes to complete the flashing system used in conjunction with Thru-Wall Flashing.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.

3.02 INSTALLATION – WEATHER BARRIER

- A. Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturer recommendations.
- B. Install weather barrier prior to installation of windows and doors.
- C. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.
- D. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers. Maintain weather barrier plumb and level.
- E. Sill Plate Interface: Extend lower edge of weather barrier over sill plate interface 3-6 inches. Secure to foundation with elastomeric sealant as recommended by weather barrier manufacturer.
- F. Window and Door Openings: Extend weather barrier completely over openings.
- G. Overlap weather barrier
 - 1. Exterior corners: minimum 12 inches.
 - 2. Seams: minimum 6 inches.
- H. Weather Barrier Attachment. Provide the following as required for each type of construction::
 - 1. Steel or Wood Frame Construction: Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturer recommend fasteners, space 12-18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.
- I. Apply flashing to weather barrier membrane prior to installing cladding anchors.

3.03 SEAMING

- A. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.
- B. Seal any tears or cuts as recommended by weather barrier manufacturer.
- C. Where furring for cladding or other construction is installed over the weather barrier, all fasteners through the weather barrier are to be applied over 12" long pieces of seam tape, or installed as otherwise required by manufacturer to maintain warranty.

3.04 OPENING PREPARATION (for use with non-flanged windows - all cladding types)

- A. Flush cut weather barrier at edge of sheathing around full perimeter of opening.
- B. Cut a head flap at 45-degree angle in the weather barrier at window head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

3.05 FLASHING (for use with non-flanged windows - all cladding types)

- A. Cut flexible flashing a minimum of 12 inches longer than width of sill rough opening.
- B. Cover horizontal sill by aligning flexible flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
- C. Fan flexible flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.
- D. Apply 9-inch wide strips of flashing at jambs. Align flashing with interior edge of jamb framing. Start flashing at head of opening and lap sill flashing down to the sill.
- E. Spray-apply primer to top 6 inches of jambs and exposed sheathing.
- F. Install flexible flashing at opening head using same installation procedures used at sill. Overlap jamb flashing a minimum of 2 inches.
- G. Coordinate flashing with window installation.
- H. On exterior, install backer-rod in joint between window frame and flashed rough framing. Apply sealant at jambs and head, leaving sill unsealed. Apply sealants in accordance with sealant manufacturer's instructions and ASTM C1193.
- I. Position weather barrier head flap across head flashing. Adhere using flashing over the 45-degree seams.
- J. Tape top of window in accordance with manufacturer recommendations.
- A. K. On interior, install backer rod in joint between frame of window and flashed rough framing. Apply closed cell spray foam sealant around entire window perimeter and at all field mulled joints to create air seal. Apply sealant in accordance with sealant manufacturer's instructions and ASTM C1193.

3.06 THRU-WALL FLASHING INSTALLATION

- A. Apply primer per manufacturer's written instructions.
- B. Install preformed corners and end dams bedded in sealant in appropriate locations along wall.
- C. Starting at a corner, remove release sheet and apply membrane to primed surfaces in lengths of 8 to 10 feet.

- D. Extend membrane through wall and leave ¼ inch minimum exposed to form drip edge.
- E. Roll flashing into place. Ensure continuous and direct contact with substrate.
- F. Lap ends and overlap preformed corners 4 inches minimum. Seal all laps with sealant.
(Specifier Note: DELETE paragraph below if a metal drip edge is not required.)
- G. Trim exterior edge of membrane 1-inch and secure metal drip edge per manufacturer's written instructions.
(Specifier Note: DELETE option below when not required for project.)
- H. Terminate membrane on vertical wall. [Terminate into reglet, counterflashing or with termination bar.]
- I. Apply sealant bead at each termination.

3.07 THRU-WALL FLASHING / WEATHER BARRIER INTERFACE AT BASE OF WALL

- A. Overlap thru-wall flashing with weather barrier by 6-inches.
- B. Mechanically fasten bottom of weather barrier through top of thru-wall flashing.
- C. Seal vertical and horizontal seams with tape or sealing membrane.

3.08 THRU-WALL FLASHING / WEATHER BARRIER INTERFACE AT WINDOW HEAD

- A. Cut flap in weather barrier at window head.
- B. Prime exposed sheathing.
- C. Install lintel as required. Verify end dams extend 4 inches minimum beyond opening.
- D. Install end dams bedded in sealant.
- E. Adhere 2 inches minimum thru-wall flashing to wall sheathing. Overlap lintel with thru-wall flashing and extend ¼ inch minimum beyond outside edge of lintel to form drip edge.
- F. Apply sealant along thru-wall flashing edges.
- G. Fold weather barrier flap back into place and tape bottom edge to thru-wall flashing.
- H. Tape diagonal cuts of weather barrier.
- I. Secure weather barrier flap with fasteners.

3.08 FIELD QUALITY CONTROL

- A. Notify manufacturer's designated representative to obtain required periodic observations of weather barrier assembly installation.

3.09 PROTECTION

- A. Protect installed weather barrier from damage.
- B. Repair any portions of weather barrier damaged by exposure to elements. If underlying construction is damaged from exposure to elements, repair or replace. If any material which can support growth of mold is damaged by exposure to elements, material must be removed.

END OF SECTION 07 25 00

SECTION 07 31 00 - SHINGLES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish labor, materials equipment, special tools, supervision and services required to install complete fiberglass roofing shingles and related accessories indicated, noted, detailed and scheduled on the drawings and specified herein.
- B. Includes Underlayment beneath finished shingle roof surface.
- C. Includes Ridge Vent atop ridges of finished shingle roof surface.

1.02 QUALITY ASSURANCE

- A. Provide materials which have been tested and listed by Underwriters Laboratories for class and rating specified.
- B. ASTM D3018 or 03161 type I, ASTM D3462.

1.03 SUBMITTALS

- A. Submit samples showing manufacturer's full range of standard colors. Submit additional or larger samples of selected colors upon request.
- B. Submit copy of manufacturer's product warranty.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in sealed packages with manufacturer's and Underwriter's Laboratories labels intact.
- B. Store material on raised platforms, protected with coverings.
- C. Do not stack bundles of shingles more than 3 ft. high.
- D. Store rolled goods on end.

1.05 PROJECT CONDITIONS

- A. Do not install underlayment or shingles on wet surfaces.
- B. Do not apply shingles when air temperature is below 32°F.

1.06 WARRANTY

- A. Provide written manufacturer's guarantee against material defects for 30 years, minimum.
- B. Guarantee workmanship for 2 years.
- C. Shall include an anti-algae / anti-fungal growth guarantee for 10 years, minimum.
- D. Shall include a 110 MPH wind warranty for 10 years, minimum.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide one of the following approved products:
 - 1. "GAF", Slate Line.
 - 2. "Certaineed", Hatteras.
 - 3. "Elk", Prestique Grande.
 - 4. "Owens Corning", Berkshire.

2.02 MATERIALS

- A. Basis of specification: "GAF", Slate Line.
- B. Shingles:
 - 1. Material: Fiberglass Asphalt, self-sealing.
 - 2. Type: Fire Resistant Class A.
 - 3. Tabs: 4 or 5.
 - 4. Size: Approx. 17" x 40".
 - 5. Weight: Approx. 235 lb./square minimum.
 - 6. Exposure: Approx. 7-1/2".
 - 7. Self-healing.
- C. Ridge Cap:
 - 1. Preformed to match shingles, by same manufacturer.
 - 2. Install atop Ridge Vent and at all lengths of ridges where Ridge Vent is not otherwise located.
- D. Underlayment:
 - 1. Provide one of the following approved products:
 - a. "Grace Building Products", Ice and Water Shield.
 - b. "Soprema", Lastobond.
 - c. "Mid-States Asphalt", Quik-Stick HT.
 - d. "InterWrap", Titanium UDL.

2. Provide beneath entire finished roof surface or as otherwise indicated on Drawings.

E. Fasteners:

1. Galvanized roofing nails, minimum 3/8" head, 5/8" min. length, 10 gauge annular threaded shank.

F. Plastic Asphalt Cement:

1. Per ASTM D 491.

2.03 RIDGE VENT

A. Basis of specification: "Air Vent, Inc.", Shingle Vent II.

B. Description:

1. Pre-formed, low-profile, shingle-over designRoof mounted static exhaust vent.
2. External wind baffle and internal weather filter for simultaneous ventilation and weather protection.
3. Internal stiffening ribs for strength and stability.
4. Continuous end air slots with 18 square inches net free area per linear foot.
5. Built-in ventilating end plug, self-closing and weathertight.
6. Made to receive installation of ridge cap shingles atop.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Underlayment:

1. Apply starting at eave line.
2. Lap each sheet 4" minimum.
3. Lap felt 6" from both sides over ridges, hips and valleys.
4. Nail at edges 8" o.c. through metal caps. Field nail at 12" o.c.

B. Shingles:

1. Apply shingles with five inches exposure, with not less than 4 nails, following manufacturers published instructions and recommendations.
2. Apply starter strip of roll roofing or inverted shingles, even with flashing lower edge.
3. Control shingle alignment with chalk lines.
4. Align cutouts and butts.
5. Comply with manufacturer's installation instructions and NRCA recommendations and details.

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3.02 MAINTENANCE STOCK

- A. See Section 01 78 46 – Closeout Maintenance Materials.

SUBMITTAL CHECK LIST

- 1. Samples.
- 2. Warranty.

END OF SECTION 07 31 00

SECTION 07 42 13 - METAL WALL PANEL

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Metal wall panel assembly as indicated on Drawings and specified herein.
 - 1. Includes preformed sheet metal panels, related accessories, trim, corners, miscellaneous flashing and attaching devices for a complete watertight installation.
- B. Metal Wall Panel systems specified herein include:
 - 1. Metal Wall Panel (Concealed Fasteners - Flush).

1.02 QUALITY ASSURANCE

- A. American Iron and Steel Institute - AISI. "Light Gauge Cold-Formed Steel Design Manual".
- B. American Society of Testing Materials - ASTM
 - A-116 Structural, Physical Quality of Galvanized Steel Sheet.
 - A-525 General Requirements for Galvanized Steel Sheet.
 - D-1056 Flexible Cellular Material.
 - B-209 Smooth or Stucco Embossed Prefinished Aluminum.
 - E-330-84 Test Method for Structural Performance by Uniform Static Air Pressure Difference.
- C. SMACNA - Architectural Sheet Metal Manual.

1.03 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Published materials description and specifications for each type panel specified.
 - 2. Manufacturer's installation instructions for each type panel specified.
- B. Samples:
 - 1. 12" x 12" section of metal panel.
 - 2. Full size sample of clip and batten.
 - 3. Samples showing manufacturer's full range of colors.
Submit additional or larger samples of selected colors upon request.

C. Shop Drawings:

1. Detailed drawings showing layout of panels, anchoring details, joint details, trim, flashing, and accessories.
2. Show details of weatherproofing, terminations and penetrations of metal work.
3. Show methods of installation and anchorage to accommodate thermal movement.

D. Warranty:

1. Submit copy of manufacturer's warranty.
2. Submit additional warranties as required by this Section.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver roof materials to site until ready for installation. Comply with manufacturer's recommendations for handling storage and protection during installation.

1.05 WARRANTY

- A. Provide manufacturer's one year guarantee against defects in materials and workmanship, as delivered.
- B. Provide installers, separate two-year guarantee against defects in installed materials and workmanship, including water integrity. Guarantee shall begin with the date of Substantial Completion.
- C. Provide written warranty, signed by manufacturer stating painted wall panel finish will not check, flake, peel or chip for a period of fifteen (15) years, minimum.
1. Film will not fade, peel or crack, ASTM D-1737.
 2. Abrasion resistance: will withstand 30 liters of falling sand before appearance of base metal, ASTM D-968.
 3. No checking, blistering or adhesion loss when tested for 5000 hours per ASTM G-23-69.
 4. Hardness: F-2H per ASTM D-3363.
 5. Humidity: less than 5% #8 blisters when tested for 1000 hours per ASTM D-2247 (100% humidity at 100°F).
 6. Salt-spray: maximum 3/16" creep and less than 5 #6 blisters when tested for 1000 hours per ASTM - B117 (5% salt fog at 95°F).
- D. Provide written warranty, signed by manufacturer stated painted finish will not chalk or fade for a period of ten (10) years, minimum.
1. Maximum chalk rating of 6 as measured by ASTM D659-44.
 2. Finish will not change color more than 1 degree in excess of 6 NBS units as measured by ASTM D-2244.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Metal Wall Panel (Concealed Fasteners - Flush):

1. Provide one of the following approved products:
 - a. "Metal Sales Manufacturing Corp."; Flush Face Series-12; #TLC-2.
 - b. "Fabral Metal Wall and Roof Systems"; Architectural Commercial Siding; Select Series 12-R2.
 - c. "Metecno-Morin"; Concealed Fastener Panels; #F-12-2.
 - d. "Centria"; IW Series; #11-A.
 - e. "Firestone Building Products Company"; UNA-CLAD UC-500.
 - f. "MBCI"; Artisan Series #L12.
 - g. "Pac-Clad / Petersen Aluminum Corp."; Flush Panel 12".
 - h. "Dimensional Metals, Inc. (DMI)"; Flush Panel FP-10.
2. Panels:
 - a. Roll formed G-90 galvanized steel.
 - b. 12" panel width coverage.
 - c. Concealed fastened panel.
3. Profile:
 - a. 1" to 1-1/2" nominal panel height.
 - b. Flush face solid surface.
 - c. Two indented pencil ribs equally spaced in the width of the panel face.
4. Fasteners:
 - a. Direct fastening through fastening leg at end of panel.
 - b. Screws into structure to be #10-16x1" pancake head driller screws.
 - c. Fasten per manufacturer's recommendation or at 48" o.c., minimum.
 - d. Adjacent panel installed in tongue-and-groove type fashion to cover and conceal fastener.

B. Gauges:

1. 22 gauge minimum for panels up to 20' lengths.
2. 20 gauge minimum for panels exceeding 20' lengths.

C. Finish:

1. Exposed side: Kynar 500 (PVDF) with 10-year warranty.
2. Back side: Acrylic wash coat, 0.3 - 0.4 mil dry film thickness.
3. Color as indicated on the Drawings. If not indicated, to be selected from manufacturer's entire selection, including premium colors. Various manufacturer's may need to custom match a color, if a specific manufacturer's color is indicated on the Drawings or specified herein, or to match an existing product.

D. Flashing and Trim:

1. Material:
 - a. C-90 galvanized steel.
 - b. Minimum 26 gauge.
2. Finish:
 - a. Kynar 500 (PVDF) with 10-year warranty.
 - b. Color to match wall panel.
3. Anchors:
 - a. Stainless steel.
 - b. Other nonferrous or coated galvanically compatible material as recommended by the metal wall panel manufacturer and as approved by the Architect.
4. Expansion and Control Joints:
 - a. As recommended by metal wall panel manufacturer.
5. Length:
 - a. Provide lengths as indicated on the Drawings.
 - b. If not indicated, provide minimum 10'-0" length with 6" splice plate to allow thermal movements.

E. Foam Closure:

1. Black closed cell foam meeting ASTM D1056. Closures to be supported and protected from weathering by a metal channel matching the flashing.
2. Provide tape and sealants with an indicated service life of 20 years.
3. Provide closures and pan-ends of panels at all exposed ends and corner conditions.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine conditions under which roofing is to be installed.
Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install wall panel system reversed to match existing, in accordance with manufacturer's instructions.
- B. System shall be capable of accommodating out-of-square and out-of-plumb conditions normally encountered in building construction.
- C. Remove strippable, protective vinyl film immediately after installation.

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METAL WALL PANELS
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SUBMITTAL CHECK LIST

1. Manufacturer's Literature.
2. Samples.
3. Shop Drawings.
4. Warranty.

END OF SECTION 07 42 13

SECTION 07 42 93.01 - METAL SOFFIT PANEL

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Prefinished metal soffit panel as indicated on the Drawings and specified herein. Includes preformed sheet metal panels, related accessories, trim, corners, miscellaneous flashing and attaching devices for a complete watertight installation.

1.02 QUALITY ASSURANCE

- A. American Iron and Steel Institute - AISI. "Light Gauge Cold-Formed Steel Design Manual".
- B. American Society of Testing Materials - ASTM
 - A-116 Structural, Physical Quality of Galvanized Steel Sheet.
 - A-525 General Requirements for Galvanized Steel Sheet.
 - D-1056 Flexible Cellular Material.
 - B-209 Smooth or Stucco Embossed Prefinished Aluminum.
 - E-330-84 Test Method for Structural Performance by Uniform Static Air Pressure Difference.
- C. SMACNA - Architectural Sheet Metal Manual.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's published product data, cutsheets, specifications and installation instructions
- B. Shop Drawings:
 - 1. Showing soffit plan, trim and flashing details.
 - 2. Show methods of installation, furring, anchorage to accommodate support and thermal movement.
- C. Samples:
 - 1. 12" x 12" section of metal panel.
 - 2. Color samples of manufacturer's entire standard selection.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver soffit materials to site until ready for installation. Comply with manufacturer's recommendations for handling storage and protection during installation.

1.05 WARRANTY

- A. Provide manufacturer's one year guarantee against defects in materials and workmanship, as delivered.
- B. Provide installers, separate two-year guarantee against defects in installed materials and workmanship, including water integrity. Guarantee shall begin with the date of substantial completion.
- C. Provide written warranty, signed by manufacturer stating painted soffit panel finish will not check, flake, peel or chip for a period of 15 years from date of substantial completion.
- D. Provide written warranty, signed by manufacturer stated painted finish will not chalk or fade for a period of ten (10) years.
 - 1. Maximum chalk rating of 6 as measured by ASTM D659-44.
 - 2. Finish will not change color more than 1 degree in excess of 6 NBS units.

PART 2 - PRODUCTS

2.01 MATERIAL

- A. Metal Soffit Panel (Solid):
 - 1. Provide one of the following approved products:
 - a. "Metal Sales Manufacturing Corp.", Soffit-Panel.
 - b. "Firestone Building Products Company"; UNA-CLAD UC-500.
 - 2. Panels:
 - a. Roll formed G-90 galvanized steel.
 - b. 24 gauge.
 - c. Concealed fastened panel.
 - d. 12" panel coverage width.
 - 3. Profile:
 - a. 1" panel depth.
 - b. Surface with one or two indented pencil V-grooves equally spaced in the width of the panel face.
 - c. Solid surface panel face.

4. Fasteners:
 - a. Direct fastening through fastening leg at end of panel.
 - b. Screws into structure to be #10-16x1" pancake head drillers screws.
 - c. Fasten per manufacturer's recommendation or at 48" o.c., minimum.
 - d. Adjacent panel installed in tongue-and-groove type fashion to cover and conceal fastener.
- B. Metal Soffit Panel (Ventilated):
 1. Provide one of the following approved products:
 - a. "Metal Sales Manufacturing Corp.", Lanced Soffit-Panel.
 - b. "Firestone Building Products Company"; UNA-CLAD UC-500 (lanced.
 2. Panels:
 - a. Roll formed G-90 galvanized steel.
 - b. 24 gauge.
 - c. Concealed fastened panel.
 - d. 12" panel coverage width.
 3. Profile:
 - a. 1" panel depth.
 - b. Surface with one or two indented pencil V-grooves equally spaced in the width of the panel face.
 - c. Lanced surface with three rows of perforations equally spaced in the width of the panel face.
- C. Finish:
 1. Exposed side: Kynar 500 (PVDF) with 10-year warranty.
 2. Back side: Acrylic wash coat, 0.3 - 0.4 mil dry film thickness.
 3. Color: As selected by Architect from manufacturer's entire standard selection.
 4. Custom colors may be required as selected by Architect or to match an existing product.
- D. Flashing and Trim:
 1. Material:
 - a. C-90 galvanized steel.
 - b. Minimum 26 gauge.
 2. Finish:
 - a. Kynar 500 (PVDF) with 10-year warranty.
 3. Anchors:
 - a. Stainless steel.
 - b. Other nonferrous or coated galvanically compatible material as recommended by the metal soffit panel manufacturer and as approved by the Architect.
 4. Eschutcheon plates for trim around penetrations.
 5. Expansion and Control Joints: As recommended by metal soffit panel manufacturer.

6. Length:
 - a. Provide lengths as indicated on the Drawings.
 - b. If not indicated, provide minimum 10'-0" length with 6" splice plate to allow thermal movements.

2.02 METAL SUPPORT, FURRING AND ACCESSORY MATERIALS

A. Metals and Finishes:

1. Manufacturer's standard steel products unless indicated as zinc alloy or other metal.
2. Provide manufacturer's standard galvanized finish on steel products.
3. Exterior components: Hot-dip galvanized finish; ASTM A 525 G90 for 18 gauge and lighter formed metal products, ASTM A 123 galvanized after fabrication for 16 gauge and heavier products.
4. Exterior Exposed Plastering Accessories: Provide zinc alloy accessories for exterior work.

B. Wire Ties:

1. Galvanized soft steel wire, 8 gauge min. for hanger wire.

C. Main Runners:

1. 1-1/2 inch Cold Rolled Channels, min. 0.475 lbs./ft.

D. Furring:

1. 3/4 inch Cold Rolled Channels, min. 0.3 lbs./ft.

PART 3 - EXECUTION

3.01 INSPECTION

- #### A. Examine conditions under which siding is to be installed.

Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Anchorages:

1. Coordinate work with structural ceiling work in insure that inserts and other structural anchorage provisions have been installed to receive soffit hangers.
2. Furnish inserts, steel deck hanger clip and similar devices to other trades for installation well in advance of time needed for coordination with other work.
3. Install furring, hangers, wires, and supports systems as required between and in addition to structural framing members.

3.03 INSTALLATION OF METAL SUPPORT SYSTEMS

- A. General Isolation
 - 1. Where work abuts overhead structure, isolate the work from structural movement sufficiently to prevent transfer of loading into the work from the building structure. Install slip or cushion type joints to absorb deflections but maintain lateral support.
- B. Main runners: 3'-0" o.c. maximum spacing.
- C. Furring: 2'-0" o.c. maximum spacing.
- D. Hanger wire: space to support max. 16 sq. ft. of ceiling area.
- E. Splices:
 - 1. Min. 12 inches for main runners.
 - 2. Min. 8 inches for furring.
 - 3. Tie with double loop 16 gauge wire at each end of splice.

3.04 INSTALLATION OF METAL SOFFIT PANEL

- A. General:
 - 1. Prior to installation, verify all dimensions and existing conditions.
 - 2. Examine, clean and repair, if necessary any adjoining work to assure proper installation of soffit.
- B. System shall be capable of accommodating out-of-square and out-of-plumb conditions normally encountered in building construction.
- C. Install escutcheon plates and other trim around conduits, piping, vents and other penetrations to provide a finished appearance and weathertight closure.
- D. Install panels and accessories in strict accordance with manufacturer's published instructions.
- E. Locations of solid versus ventilated:
 - 1. Install solid panel for main product installation throughout, except where ventilated.
 - 2. Install ventilated panels where indicated on the Drawings. If not shown, install a minimum of (2) rows of ventilated panels at each low eave location.
 - 3. Layout of panels shall be as accepted by the Architect.

3.05 CLEANING AND PROTECTION

- A. Clean all aluminum work after installation and protect from damage until time of substantial completion.

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METAL SOFFIT PANEL
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SUBMITTAL CHECK LIST

1. Product Data.
2. Shop Drawings.
3. Samples.

END OF SECTION 07 42 93.01

SECTION 07 53 00.01 - ELASTOMERIC SHEET ROOFING SYSTEM - FULLY ADHERED (EPDM)**PART 1 - GENERAL****1.01 WORK INCLUDED**

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete the Work indicated, noted and detailed on the Drawings and specified herein.
- B. The Work generally involves a new single-ply E.P.D.M. (Ethylene Propylene Diene Monomer) membrane roofing system at low slope roof area on drive-thru canopy. In general, and not by way of limitation, work includes, but is not limited to, the following:
 - 1. E.P.D.M. system at low slope roofs:
 - a. Insulation (extruded polystyrene flute fillers and polyisocyanurate insulation boards) mechanically fastened to the deck, with tapered insulation saddles mechanically fastened to the deck.
 - b. Overlayment board ("Georgia Pacific", "Dens Deck"), atop the insulation, mechanically fastened to the deck. Joints of overlayment staggered with insulation joints.
 - c. The membrane sheet is fully adhered to the overlayment board, and the seams are glued, lapped and sealed.
 - d. Work includes the installation of new insulation, saddles, sumps, blocking, roof membrane, fasteners, adhesives, copings, flashings, sealants, and any/all additional items, components and accessories necessary to complete the work as indicated and meet the manufacturer's warranty requirements for a complete system warranty.
- C. The words "ply", "membrane", and "sheet" are used interchangeably, and are to be interpreted as having the same meaning.
- D. Work includes the following special warranties, as specified:
 - 1. Water-tightness warranty from the installer.
 - 2. Warranty from the manufacturer for water-tightness.
- E. Not all details and conditions are shown on the Drawings. Contractor is responsible for providing a complete, finished, and water-tight roof system, warranted for water tightness from the deck up.
- F. System requirements or details as indicated on the Drawings or specified herein may exceed the manufacturer's minimum warranty requirements. Provide as indicated, above and beyond the minimum warranty requirements. Notify the Architect during bidding if any conflicts exist between that as indicated and the manufacturer's warranty requirements.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Related Documents:

1. The Contract Documents, as defined in the Summary of Work, apply to the Work of this Section.
2. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.03 QUALITY ASSURANCE

- A. Elastomeric sheet roofing and flashing shall be installed only by factory-trained and manufacturer approved and licensed roofing contractors familiar with the product and in strict accordance with the manufacturer's instructions.
- B. All details relating to the installation of the approved roofing contractor and/or by the manufacturer shall be installed in such a manner that the manufacturer will furnish the specified Warranty for the installation.
- C. All materials used shall be as furnished or approved by the roofing manufacturer for use and compatibility with the entire roofing system.
- D. Manufacturer shall send a qualified technical representative to project site for purpose of advising Installer of procedures and precautions related to use of roofing materials.
- E. UL Listing: Provide labeled materials that have been tested and listed UL for application indicated to provide a "Class A" rated materials/system.
- F. Factory Mutual Listing: provide flexible sheet roofing system which is listed as approved in the FM Approval Guide and complies with the following FM classifications:
 1. "Class 1" fire rating.
 2. "Classification I-90" wind uplift rating on FM Loss Prevention Data Sheets 1-28 and 1-29, for 90 mph 3-second gust, Exposure Category C.
- G. Conduct fastener pullout tests in accordance with the latest revision of the SPRI/ANSI Fastener Pullout Standard to help verify condition of deck/substrate and to confirm expected pullout values.

1.04 REFERENCES

- A. Publications of the following institutes, associations, societies and agencies are referred to in this Section.
 1. American Society for Testing and Materials (ASTM):
 - a. C 208 - Specification for Cellulosic Fiber Insulating Board.
 - b. C 1177 - Standard Specification for Glass Mat Gypsum Roof Board.
 - c. C 1289 - Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - d. D 412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
 - e. D 471 Test Method for Rubber Property-Effect of Liquids.
 - f. D 573 Test Method for Rubber-Deterioration in an Air Oven.
 - g. D 624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
 - h. D 1149 Test Method for Rubber Deterioration-Surface Ozone Cracking in a Chamber.

- i. D 1822 Test Method for Tensile-Impact Energy To Break Plastics and Electrical Insulating Materials.
 - j. D 2137 Test Methods for Rubber Property-Brittleness Point of Flexible Polymers and Coated Fabrics.
 - k. D 5602 - Test Method for Static Puncture Resistance of Roofing Membrane Samples.
 - l. D 5635 - Test Method for Dynamic Puncture Resistance of Roofing Membrane Samples.
 - m. E 84 – Test Method for Surface Burning Characteristics of Building Materials.
 - n. E 96 – Test Methods for Water Vapor Transmission of Materials.
 - o. E 108 – Test Methods for Fire Tests of Roof Coverings.
 - p. G 26 - Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.
 - q. G 53 - Practice for Operating Light and Water Exposure Apparatus (Fluorescent UV/Condensation Type) for Exposure of Nonmetallic Materials.
 - r. G 155 Practice for Operating Light Exposure Apparatus (Xenon-arc Type) With and Without Water for Exposure of Non-Metallic Materials.
 - s. G 154 Practice for Operating Light and Water-Exposure Apparatus (Fluorescent UV Condensation Type) for Exposure of Nonmetallic Materials.
- 2. Underwriter's Laboratories, Inc. (UL) – Class rating per applicable State Building Code.
 - 3. Factory Mutual Underwriters (FM):
 - a. Factory Mutual Research Corporation-Loss Prevention Data Sheets:
1-7; 1-28; 1-28(s); 1-29; 1-30; 1-49.
 - b. Factory Mutual Research Corporation (FMRC) - Approval Guide - Roof Coverings.
 - c. Factory Mutual Research Corporation Standard 4470 - Approval Standard for Class I Roof.
Covers
 - 4. National Roofing Contractors Association (NRCA) - NRCA Roofing and Waterproofing Manual.
 - 5. Roof Consultants Institute (RCI) - Glossary of Terms.
 - 6. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
 - 7. American Society of Civil Engineers (ASCE) - Reference Documents ASCE 7-98, Minimum Design loads for Buildings and Other Structures.

1.05 CODE AND TEST REQUIREMENTS

- A. The roof system that is bid shall have been tested in compliance with the following codes and test requirements.
 - 1. The roof system assembly shall have test data in compliance with test criteria set forth in Factory Mutual Test Standard 4470 to support uplift pressure resistance to design pressures calculated in compliance with ASCE 7-98.
 - 2. The roof system assembly shall be approved for application within the International Building Code jurisdiction.
 - 3. The roof system assembly shall be installed in compliance with all local building and safety requirements adopted by the local building code jurisdiction.
 - 4. All metal flashings shall be in compliance with recommendations set forth in Factory Mutual Research Corporation Loss Prevention Sheet 1-49.

1.06 SUBMITTALS

A. Submit the following in compliance with contract conditions and Division 1 Specification Sections.

1. Compliance Confirmation:
 - a. Confirmation of Manufacturer and Applicator/Contractor/Installer requirements enumerated in this Section and as indicated on the Drawings.
2. Samples:
 - a. 12" x 12" square sample of each type of membrane, including a finished "T-shaped" side/end-lap seam.
 - b. 12" x 12" square sample of all roof insulation types and overlayment used.
 - c. Flashing materials.
 - d. All fastener types used.
3. Product Data:
 - a. Manufacturer's current published installation instructions, flashing and roofing specifications, Product Data Sheets for all products, and Material Safety Data Sheets for all products used in the assembly of the roof system.
 - b. Manufacturer's complete recommended maintenance procedures for roofing system, including precautions and warnings to prevent damage to, and deterioration of roofing system, and any safety precautions published by the roof system manufacturer.
4. Shop Drawings:
 - a. Provide complete installation details of roofing, flashing, fastening and insulation, including notation of roof slopes and fastening patterns of insulation and membrane. Shop drawings to include (but not limited to):
 - 1) Outline of roof with roof size and elevations shown.
 - 2) Profile details of flashing methods for all conditions and penetrations.
 - 3) Technical acceptance from roof membrane manufacturer.
 - 4) Insulation fastener layouts complying with FM Data Sheet 1-29.
Indicate number of fasteners required for field, perimeter and corners.
 - 5) Setting plan for insulation including all tapered, saddles and crickets.
 - 6) Layout of roofing seams, direction of laps.
5. Certificates:
 - a. Manufacturer's written approval of:
 - 1) The roof system to be applied over the submitted insulation and deck type.
 - 3) The coping system.
 - 4) The Contract Documents.
 - 5) The Applicator/Contractor/Installer.
 - 6) Warranty conditions specified.
Submit certification letter acknowledging receipt of the specifications, intent to issue warranty, and intent to perform specified field inspections.
 - b. Insulation manufacturer's certification that the product is compatible with the proposed roof system and meets specification requirements.
 - c. Manufacturer's field reports from field inspections.
Submit the following reports directly to the Architect:
 - 1) Preparatory Inspection.
 - 2) Initial Inspection.

- 3) Follow-up Inspections.
- 4) Final Inspection.
- d. At completion of roof application, the contractor and membrane manufacturer shall supply the Owner and/or Architect with a complete set of as-built drawings.
- e. Certification from the membrane manufacturer at job completion confirming the installed roof assembly is in compliance with the approved submittals.

1.07 QUALIFICATIONS

A. Applicator's Qualifications:

- 1. All roofing contractors/installers must be pre-qualified to bid, by both the manufacturer and the Architect, at least seven days prior to the bid date.
- 2. For purposes of quality assurance and performance with specified roof system installation, all bidders are to be approved by the manufacturer, and listed as approved by the Architect, prior to the bid date and throughout the installation, and able to present a copy of current certification status upon request by the Architect or Owner.
- 3. Contractor must have experience in installing the specified roof system and be able to produce a list of referenced projects to visit.
- 4. Maintain a full-time supervisor/foreman experienced with the specified roof system on-site when roof system application is in progress. Certification of general experience and experience with specified roof system shall be included in the submittal.
- 5. Be equipped with a trained crew and all capital equipment required to perform work of this section.
 - a. Maintain all equipment and tools in good working order.
 - b. Provide, in writing, safety plan and equipment to the work force and specify, proper clothing.
- 6. Contractors not already pre-qualified in this Specification, and wishing approval to be qualified to bid, shall submit qualifications and certifications in writing to the Architect for written approval prior to bid.

B. Pre-Qualified Installers:

- 1. American Roofing
4610 Roofing Rd.; Louisville, KY 40218
(502) 966-2900; (502) 966-2970 fax
- 2. Archway Roofing & Sheet Metal Systems, Inc.
6404 Organ Creek Road; Pendleton, KY 40055
(502) 225-4446; (502) 225-9995 fax
- 3. B&L Sheet Metal & Roofing
1301 North Monroe Street; Bloomington, IN 47404
(812) 332-4309; (812) 332-8124 fax
- 4. Blackmore and Buckner Roofing
1256 East Roosevelt Avenue, Indianapolis, IN 46202
(317) 263-0707; (317) 263-0727 fax
- 5. Bruce's Tri-State Roofing & Sheet Metal Co.
320 East 14th Street; Owensboro, KY 42303
(270) 683-0610; (270) 683-3508 fax
- 6. Carlon Roofing & Sheet Metal, Inc.
1430 Selinda Avenue; Louisville, KY 40213

- (502) 458-9898; (502) 458-9068 fax
7. Commonwealth Roofing
1449 Hugh Avenue, Louisville, KY 40213-1916
(502) 459-2216
 8. C.E. Reeve Roofing, LLC
805 City Center Drive, Suite 160
Carmel, IN 46032
(317) 884-7663 (317) 846-8464 fax
 9. D. Riney Roofing, LLC
2203 Stannye Drive; Louisville, KY 40222
(502) 544-6202
 10. Geoghegan Roofing Corporation
1405 Garland Avenue; Louisville, KY 40210
(502) 585-4313; (502) 585-5494 fax
 11. Hedinger Roofing
2803 Market Street; Jasper, IN 47546
(812) 482-5066; (812) 634-2123 fax
 12. Henry C. Smither Roofing
6850 E. 32nd Street; Indianapolis, IN 46226
(317) 545-1304; (317) 546-4764 fax
 13. Holland Roofing Company
3600 Chamberlain Lane; Louisville, KY 40241
(502) 426-7767; (502) 426-7787 fax
 14. Horning Roofing and Sheet Metal Company
2340 Enterprise Park Place Avenue; Indianapolis, IN 46218
(317) 636-9128; (317) 636-9134 fax
 15. HRC Roofing & Sheet Metal
2845 Roadway Drive; Columbus, IN 47202
(812) 372-8409; (812) 372-6836 fax
 16. Industrial Contractors, Inc.
401 N.W. First Street; Evansville, IN 47708
(812) 464-7270; (812) 464-7399 fax
 17. Insulated Roofing Contractors
326 Mt. Tabor Road; New Albany, IN 47150
(812) 206-7700; (812) 206-7701 fax
 18. Lehman Roofing, Inc.
2728 Mt. Vernon Avenue; Evansville, IN 47712
(812) 426-1111; (812) 426-1114 fax
 19. Midwest Roofing and Sheet Metal, Inc.
1208 North Harlan Avenue; Evansville, IN 47711
(812) 423-1138; (812) 423-7255 fax
 20. Palmer Roofing and Sheet Metal, Inc.
1080 Jean Drive; Jeffersonville, IN 47130
(812) 283-4800; (812) 283-4900 fax
 21. R. Adams Roofing
4990 Massachusetts Ave.; Indianapolis, IN 46218
(317) 545-7663
 22. Roofing Services and Solutions, LLC (RSS)
1508 Fabrice Boulevard; Jeffersonville, IN 47130

- (812) 283-4490; (812) 283-6412 fax
23. Royalty Companies
1000 D Avenue; Seymour, IN 47274
(812) 523-8392
24. Southern Roofing, Inc.
770 Jonesville Road; Columbus, IN 47201
(812) 375-1888; (812) 375-1850 fax
25. South Central Roofing, Inc.
1650 N State Rd 46; Columbus, IN 47203
(812) 579-5733; (812) 579-5739 fax

C. Manufacturer's Qualifications:

1. Must have a minimum of 20-year experience manufacturing elastomeric roofing membranes.
2. Provide a factory-trained technician to attend site meetings, interim inspections, and to perform final inspections of the roofing system.
1. 3. Provide a warranty upon satisfactory installation of the roofing system.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Arrange deliveries to provide sufficient quantities to permit continuity of any phase of work.
- B. Do not store material on roof construction in concentrations large enough to impose excessive stress on decking or structural members. No stockpiling of materials on the roofs will be permitted. Materials will be raised onto roof in limited quantities only as needed for immediate work.
- C. Membrane shall be stacked and protected from moisture penetrating the ends.
- D. Deliver all materials and store in their unopened original packaging, bearing and manufacturer's name, related standards and any other specification or reference accepted as standard.
1. When stored outdoors, insulation is to be stacked on pallets or dunnage at least four (4) inches above ground level and covered with "non-sweating" tarpaulins. Factory shrink wrapping is not sufficient protection for insulation – regardless of the number of layers of shrink wrapping.
 2. Store membrane rolls lying down on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethelene tarpaulins are not acceptable due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.
- E. Protect and permanently store all materials in a dry, well-vented and weatherproof location. Only materials to be used the same day shall be removed from this location. During winter, store materials in a heated location with a 50°F. minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.
- F. Carefully store on end materials delivered in rolls with salvage edges up, a minimum of 6 inches above grade. Store metal flashings and counterflashings in such a way as to prevent wrinkling, twisting, scratching and other damage.

- G. Adhesive storage must be between the range of above 40°F and below 80°F. Area of storage shall be suitable for flammable storage.
- H. All materials determined to be damaged (as determined by the Architect or manufacturer's representative) shall be removed from job site and replaced at no cost to Owner. Any insulation which becomes wet must be removed from the jobsite. Any insulation which experiences condensation under the factory shrink wrapping must be removed from the jobsite.

1.09 MANUFACTURER CERTIFICATIONS AND INSPECTIONS

A. Manufacturer Certification:

- 1. Submit certification by the manufacturer of the system materials used that these Specifications and the Drawing Details are acceptable to them for the deck and surfacing to which they are to be applied.
- 2. If details for any manufacturer's systems proposed in the Contract Documents are not acceptable to the manufacturer, submit corresponding details proposed for the particular application, together with the manufacturer's reasons for not accepting the conditions depicted in the Specifications or Drawings. No alternate details will be considered without evidence of valid objections on the part of the manufacturer to the Contract requirements prior to bid due date.
- 3. No deviation is to be made from this Specification without prior written approval by the manufacturer and the Architect.
- 4. Submit certification signed by membrane manufacturer's quality control manager that polymer thickness is as specified.

B. Inspection:

- 1. Prior to completion, at least twice during installation, and at completion of the installation, an inspection shall be made by a representative of the manufacturer in order to ascertain that the roofing system has been installed according to their published specifications, standards and details.
- 2. Warranty will be issued upon approval of the installation.
- 3. Copies of manufacturer's inspection reports shall be submitted directly to the Architect, and to the Owner within ten days of the inspection.
- 4. Perform additional inspections at no additional cost, as required to accommodate phasing of the work, partial installations, and as otherwise requested by the Architect to address quality control issues.

1.10 WARRANTY

- A. Upon completion of work, furnish to the Owner the manufacturer's written and signed standard warranty, certifying the performance of his products and the consistency of the properties of such products affecting their performance for a period of **20 years** from date of acceptance.
- B. The Contractor is to cover damages to the building resulting from failure to prevent penetration of water during construction.

- C. The Contractor is to guarantee all work against defects in materials and workmanship for a period of one year following final acceptance of the Work.
- D. **Warranty shall be a No-Dollar-Limit (NDL) total system warranty** covering the materials and labor for complete roof system. The Warranty shall not be pro-rated over the term of the warranty and shall not be limited to the original installation cost. Roof system is defined as insulation, overlayment, roof membrane, flashings, coping, counter flashing, termination bars, boots, penetrations, primer, scuppers, roof drain pans, crickets, saddles, fasteners, and all other roofing components needed to create a water tight barrier above the metal deck.
- E. Include the following items within the Warranty:
 - 1. Roofing inspection by Manufacturer's Roofing Quality Control Inspector within 24 months after date of Final Acceptance.
 - 2. Roofing manufacturer will provide unlimited repairs during warranty period with no cost limit.
 - 3. Temporary emergency repairs may be made by Owner without voiding any warranty provisions.
 - 4. Attach copy of Record Document Roof Plan Drawings, Roof Detail Drawings, and Record Membrane Roofing Specification Section to Warranty.
 - 5. Warranty shall cover wind gusts up to 72 miles per hour (sustained), and 90 mph-3 second gust.
 - 6. Colorfastness: no significant change in the color of the membrane during the Warranty period.
 - 7. Warranty shall not exclude "ponding" water, as defined in the NRCA Roofing Guidelines.

1.12 JOB CONDITIONS

- A. Proceed with roofing work when existing and forecasted weather conditions permit work to be performed in accordance with manufacturer's recommendations and warranty requirements. All surfaces to receive insulation, membrane or flashings must be dry.
- B. During roofing work, exposed unfinished surfaces shall be protected with tarps in order to prevent damage. Contractor shall assume full responsibility for any damage. Protect existing building and completed areas of new additions from all risks of damage from inclement weather.
- C. Do not install membrane under the following conditions:
 - 1. The roof assembly permits interior air to pressurize the membrane underside.
 - 2. Any exterior wall has 10% or more of the surface area comprised of open doors or windows or unfinished wall enclosures.
 - 3. The wall/deck intersection permits air entry into the wall flashing area.
- D. Install uninterrupted waterstops at the end of each day's work and completely remove waterstops before proceeding with next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as installation progresses. Replace contaminated membranes at no cost to Owner.
- E. Do not use asphalt, coal tar, heavy oils, roofing cement, creosote or preservatives.
- F. Arrange work sequence to avoid using newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is unavoidable, provide all necessary protection and barriers to segregate work area to prevent damage to adjacent areas and provide plywood protection boards.

- G. Remove all dirt, debris, and dust from all surfaces prior to and during application.
- H. Comply with all safety regulations of authorities having jurisdiction.
- I. All material removed during construction and all waste materials to be immediately removed and legally disposed of off site.
- J. Do not overload the roof deck or building structure.
- K. Keep all solvents, flammable adhesives and deck primers away from open flames, sparks and excessive heat. Keep lids closed at all times on all unused cans. Keep solvents adhesives and primers away from air intake vents. Prevent adhesive odors from entering building.
- L. Verify that all roof drain lines are functioning correctly before beginning work. Report any blockages to Architect.
- M. Repair all damage to existing building and grounds caused by construction work at no cost to Owner.
- N. Wear proper clothing and protective gear at all times, for protection of both the installers and the roof system surfaces, materials and components.
- O. Protect new roof membrane from any asphalt and coal tar residue elsewhere on the project.

This residue, whether tracked by foot traffic or in the form of construction dust is detrimental to the new roof membrane. Permanent walk pads are to be placed around roof hatches leading to roof access ladders. Inform any/all other trades accessing or working on the roof of this concern.
- P. Visit the site prior to bidding and carefully examine all existing areas and conditions that may affect proper execution of the work. No claims for extra costs will be allowed because of lack of full knowledge of the existing conditions.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide one of the following approved EPDM Roofing Systems (BLACK EPDM):
 - 1. "Firestone Industrial Products"; "Rubber Gard".
 - 2. "Carlisle Tire and Rubber Co."; "Sure-Seal".
 - 3. "Versico Incorporated"; "VersiGard".
 - 4. "Manville, Roofing Systems Division"; "SMP".
 - 5. "International E.P.D.M. Rubber Roofing Systems, Inc."; "135 Glue Down".
 - 6. "GenFlex"; AFR EDPM.

2.02 ROOF SYSTEM**A. Adhered Elastomeric Membrane Roofing Sheet:**

1. E.P.D.M. (Ethylene Propylene Diene Monomer) compounded elastomer conforming to the latest minimum physical properties of the manufacturer.
2. Minimum thickness: .060 inches.
3. Minimum tensile strength: 1,300 psi (ASTM D 412).
4. Elongation: 250% min. (ASTM D 412).
5. Vapor permeable.
6. Ultraviolet and ozone resistant.
7. Low temperature brittleness of -40°F min. (ASTM D 2137).
8. Sheets shall be as large as possible to minimize seams.

B. Flashing:

1. Self curing E.P.D.M. flashing.
2. Minimum thickness: .060 inches.
3. Minimum tensile strength: 1,300 psi (ASTM D 412).
4. Elongation: 300% min. (ASTM D 412).
5. Ultraviolet and ozone resistant.
6. Low temperature brittleness of -40°F min. (ASTM D 2137).
7. Color to match sheet membrane.

C. Bonding Adhesive:

1. Compatible with materials to which membrane is to be bonded and recommended by membrane manufacturer.
2. Formulated to withstand minimum 90 psf uplift force.

D. Sheet Seaming System:

1. Manufacturer's standard materials for sealing lapped joints, including edge sealer to cover exposed spliced edges as recommended by membrane manufacturer.

E. Termination Bars, Cant Strips and Flashing Accessories:

2. 1. Types recommended by membrane manufacturer provided at locations indicated and at locations recommended by the manufacturer, and including adhesive tapes, flashing cements, and sealants.

2.03 FASTENERS**A. Fastening systems shall use fasteners approved for use by the membrane manufacturer, designed metal and wood decks, and for adhesion of flashing to the substrates encountered.****B. Insulation and Overlayment:**

1. Mechanical fasteners with fastener plates to secure insulation to decking shall be approved by the insulation manufacturer for the system specified.
2. The same brand fastener is to be used throughout the work.
3. Number of fasteners and layout will be recommended by the manufacturer and as per FM Approval Guide for I-90 wind uplift. Install additional fasteners as directed in the field by the Architect.
4. Length of fastener shall be determined by the thickness of the decking and may vary with the thickness of the insulation. Fasteners shall be appropriate lengths to achieve a minimum of 1 inch penetration. Contractors shall ensure that fasteners do not penetrate roof deck to exposed interior.
5. The fastener and plate shall be used in all areas for attachment of the membrane. The length of the fastener shall be determined by the thickness of the insulation allowing for a 1 inch penetration into the deck, or as otherwise determined by the membrane manufacturer, but not less than 1 inch.

2.04 WOOD BLOCKING AND SHEATHING

- A. All nailers and blocking material to be free of wane, shake, decay or checks.
 1. Blocking shall not be less than Construction Grade, Southern Pine, max. 19% moisture content.
 2. Provide manufacturer's recommended protection between blocking for equipment, piping, and conduit supports above roof. Provide solid wood blocking as required for fastening and terminating membrane and flashing system. Install at the perimeter of the entire roof and around other roof projections and penetrations. Thickness of nailers must match the insulation thickness to achieve smooth transition.
 3. See Section 06 10 00 - Rough Carpentry for further requirements of blocking with regards to Preservative Treated Wood and Fasteners in Treated Wood.
- B. Plywood to be minimum 1/2 inch thick CDX (C side out), smooth surfaced, exterior grade, with exterior grade glues. Provide where indicated on Drawings. Whether indicated on Drawings or not, provide at all existing masonry and concrete walls where membrane is installed and at all other locations required by manufacturer, and no change in contract price. Prime all plywood prior to membrane installation.

2.05 ROOF INSULATION

- A. Provide one of the following approved products:
 1. "Firestone"; ISO 95+ Polyisocyanurate Insulation.
 2. "GenFlex"; ISO.
 3. "Versico Incorporated"; MP-H POLYISO.
- B. Polyisocyanurate Board Insulation:
 1. Reference Standards:
 - a. FS HH-I-1972/Gen.
 - b. FS HH-I-1972/2.
 - c. FS HH-I-1973/3.
 - d. ASTM C 209 – Water Absorption.
 - e. ASTM E 96 - Water Vapor Transmission of Materials.
 - f. ASTM D 1621 – Compressive Strength.
 - g. ASTM D 1622 – Density.

- h. ASTM D 2126 – Dimensional Stability.
 - i. ASTM E 84 – Flame Spread.
- 2. Quality Control:
 - a. Verify insulation furnished is compatible with and suitable for the specified roofing system, including roofing conditions, installation procedures and type of membrane to be used.
- 3. Description:
 - a. Rigid cellular thermal insulation with glass-fiber reinforced polyisocyanurate closed-cell foam core and asphalt/glass fiber felt facing laminated to both sides.
 - b. Complying with Federal Specification HH-I-1972/2.
 - c. 20 psi minimum.
 - d. Aged R-value of 5.56 per inch, minimum, at 75°F respectively.
 - e. Nominal Size 48 inches x 48 inches.
- 4. Thickness:
 - a. Thickness as indicated on the Drawings (not including tapered saddles and crickets). If not indicated, provide 4 inches (with a minimum R-19).
- 5. Layers:
 - a. Unless indicated otherwise, insulation is to be installed in two layers.
 - b. One layer of insulation is allowed at the following conditions:
 - 1) Where total insulation thickness is 2 inches or less.
 - 2) Where an overlayment board is specified as part of the roof system, provided that the joints are staggered between the insulation board and the overlayment board.

C. Polyisocyanurate Tapered Insulation:

- 1. Quality Control:
 - a. Meet all Reference Standards for Polyisocyanurate Board Insulation as specified herein.
 - b. Meet or exceed all UL and FM test requirements and roof membrane manufacturer's requirements for installation and warranty.
 - c. Contact the manufacturer's representative for any tapered design assistance.
- 2. Description:
 - a. Same materials as Polyisocyanurate Board Insulation specified herein, but manufactured in a tapered profile.
 - b. Provide tapered insulation, saddles and crickets atop board insulation as indicated on the Drawings and/or specified herein.
- 3. Thickness and Slope:
 - a. Tapered Insulation:
 - 1) Tapered insulation areas to be provided in thickness and slope indicated (not including tapered saddles and crickets), or if not indicated, minimum 1/4 inch per foot slope.
 - b. Saddles and Crickets:
 - 1) Slope as required to direct water away from the item the saddle or cricket is protecting, minimum 1/4 inch per foot slope.

D. Mechanical Anchors:

1. Reference Standards:
 - a. SAE 1022, Heat Treated.
2. Type:
 - a. As recommended by insulation manufacturer for deck type, and complying with fire and insurance requirements.
 - b. Fastener plates are to be a flat profile to minimize telegraphing through membrane at steep slope roof.
3. Description:
 - a. Heavy-duty threaded fastener with 3-coat waterborne fluorocarbon polymer coating and drill point tip capable of penetrating 20-gauge steel.
 - b. Fastener shall meet minimum thread size of .260 inches and 13 threads per inch.
 - c. Length shall be sufficient to penetrate deck a minimum of 3/4 inch for steel and 1 inch for wood and concrete.
 - d. Structural concrete decks must be pre-drilled with a 7/32 inch carbide drill bit to a depth 1/2 inch deeper than the fastener engagement.

E. Adhesive Anchoring:

1. Where required, use high velocity insulation adhesive as recommended by membrane manufacturer and meeting FM 1-90.

2.06 OVERLAYMENT BOARD

A. Provide one of the following products, pending compliance with the manufacturer's warranty:

1. "Georgia Pacific", "Dens Deck"(siliconized gypsum).
2. "Firestone", "Coverdeck 250" (siliconized gypsum).
3. "Firestone", "IsoGard HD Coverboard" (polyisocyanurate).

B. Description of Acceptable Types:

1. Siliconized gypsum, fire tested hardboard with heat cured glass-mat facers; 1/4" thick.
2. High-density, closed-cell polyisocyanurate foam core with a coated glass facing sheet; 1/2" thick.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Before commencing work, the Owner's representative, together with the roofing contractor and manufacturer field supervisor shall inspect and approve the deck condition (slopes and nailing supports if applicable) as well as verticals on parapet walls, roof drains, stack vents, vent outlets and others, building joints, etc. If applicable, a non-compliance notice shall be submitted to the contractor so that adjustments can be made. Commencement of work shall imply acceptance of surfaces and conditions, and responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

- B. Any standing water or snow shall be completely removed from the area prior to starting roof work.
- C. Before commencing work, all surfaces shall be smooth, clean, dry and free of any debris that would adversely effect the installation of the membrane.
- D. All roof penetrations shall be made prior to installation of the roofing membrane. Verify that the work of other trades has been properly completed.
- E. Prevent compounds from entering and clogging drains and conductors, and from spilling or migrating onto surfaces or other work.
- F. Environmental Requirements:
 - 1. Do not work in rain, snow, or in presence of water.
 - 2. Roofing installation may continue in cold weather provided adhesives and sealants are stored at room temperature and used within a 4 hour period after being exposed to lower temperatures.
 - 3. Remove any work exposed to freezing.
- G. All surface voids of the immediate substrate greater than 1/4 inch wide must be properly filled with an acceptable insulation or suitable fill material.
- H. Protect metal, glass, plastic, and painted surfaces from adhesives and sealants.
- I. Protect neighboring work, property, cars, and persons from spills and overspray from adhesives, sealants and coatings and from damage related to roofing work.
- J. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.

3.02 SURFACE PREPARATION

- A. Clean all debris.
- B. Replace damaged or defective areas prior to commencement of work under this Section.
- C. Protect adjacent building surfaces and equipment from damage.
- D. Maintain all equipment and tools in good working order.

3.03 INSULATION APPLICATION

- A. Install roof insulation with overlayment, with joints staggered. Install and fasten at a rate to meet specified uplift requirements. Fasteners must meet an average pullout of 300 lbs. No gaps between boards, nailers and penetrations greater than 1/8 inch permitted.
- B. Do not install insulation which has been allowed to become wet, or has had any contact with water. Remove all insulation which becomes wet. Remove broken, delaminated and damaged insulation.

- C. Install tapered insulation around all roof drains at least 3'-0" x 3'-0" wide, and not greater than 4'-0" x 4'-0" wide to create a drain sump. Do not use metal sump pans. If existing metal sump pans are encountered, remove and patch decking as required.
- D. Install insulation and overlayment board at all faces of all curbs. Coordinate with other trades as required. Verify that existing mechanical equipment will still fit over curb after installation of new insulation. Contact Architect for instruction if it appears that equipment will not fit.

3.04 FASTENING REQUIREMENTS - MECHANICALLY FASTENED INSULATION SYSTEM

- A. Design for Exposure Category C, 90 mph, 3 second gust. Provide calculations showing compliance with ASCE 7-98, SPRI, and FM requirements for wind uplift.
- B. Penetrations and Drains require the use of 3 head lap fasteners in field areas. Target must be installed around penetration/drain and fastened in all four directions within 3'-0" x 3'-0" area.
- C. Curbs are to be treated as perimeters for density protocol. Area must assume a minimum of a 3 foot dimension from edge of curb out onto the field areas.
- D. Insulation Attachment Top Layer:
 - 1. Full depth of all layers of approved rigid insulation and overlayment board.
 - 2. Top Layer Attachment: Mechanically Attached.

3.05 INSTALLATION

- A. All membrane installation is to be in strict accordance with the manufacturer's instructions. Install membrane by unrolling over prepared substrate, lapping adjoining sheets as recommended by manufacturer.
- B. For Adhered Membranes:
 - 1. Apply adhesive to surfaces to be bonded according to manufacturer's instructions.
 - 2. Use solvent based adhesive except where local ordinances prohibit use.
 - 3. Do not use solvents where fumes can migrate into existing or occupied portions of building. If occupants of the building or people nearby the project complain about solvent odor, discontinue use and use water based adhesive.
 - 4. Roll membrane into place when adhesive has properly cured.
- C. Sealing of Seams:
 - 1. Treat seams with special cement and apply sealant to exposed sheet edges, tapering application as recommended by the manufacturer.
 - 2. Check all sealed seams for continuity using a rounded screwdriver, or cotter pin puller type tool. Do not probe seams until they have cured and reached the ambient temperature. On-site evaluation of sealed seams to be made daily by the Contractor at locations as directed by the Architect, the Owner's Representative, or the membrane manufacturer.

3. Roll all seams as the work progresses with silicone coated steel hand roller.
- D. Install mechanical fasteners, flashings and counter-flashings and accessories at locations shown on the Drawings and as recommended by the manufacturer.
1. Secure membrane at all locations where the membrane terminates or goes through an angle change greater than 1 inch in 12 inches, except for round pipe penetrations less than 18 inches in diameter and square penetrations less than 4 inch square.
 2. Use same membrane for flashing and field.
- E. Flashings:
1. Install all flashing concurrently with the roof membrane as the job progresses. Do not use temporary flashing unless approved in writing by Architect and membrane manufacturer. Remove and replace any materials that become wet as a result of improper or inadequate coverage of roof with membrane and permanent flashing.
 2. Adhere flashing in accordance with manufacturer's instructions, and paragraph above for adhered membranes.
 3. Install transition material at base of all transitions, peaks and valleys as required by manufacturer.
 4. Extend all flashing a minimum of 8 inches above roofing level, unless approved in writing by manufacturer and Architect.
 5. Mechanically fasten all flashing membranes along the counter flashed top edge. Provide termination bar, sealant, and counterflashing at all terminations.
 6. Install coping in accordance with manufacturer's instructions. Any cut edges of metal are to be neat, straight, and at right angles. Paint exposed metal at cut edges with paint to match factory finish.
- F. Flashing Penetrations:
3. General:
 - a. If project is Retrofit or Tear-Off, remove all existing flashings (i.e., lead, asphalt, mastic, etc.).
 - b. Flash all penetrations passing through the membrane.
 - c. The flashing seal must be made directly to the penetration.
 2. Pipes, Round Supports, etc.:
 - a. Flash with manufacturer's prefabricated, pre-molded Pipe Flashings where practical.
 - b. Flash using unsupported Flashing membrane when Pre-Molded Flashing is not practical.
 3. Structural Steel Tubing:
 - a. Use a field fabricated pipe-flashing detail provided that the minimum corner radius is greater than 1/4 inch and the longest side of the tube does not exceed 12 inches. When the tube exceeds 12 inches: use a standard curb detail.
 4. Roof Drains:
 - a. If project is Retrofit or Tear-Off, remove all existing flashings, drain leads, roofing materials and cement from the existing drain in preparation for membrane Water Block Seal.
 - b. Provide a clean even finish on the mating surfaces between the clamping ring and the drain bowl.

- c. Taper insulation around the drain to provide a smooth transition from the roof surface to the drain. Use pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope. Slope shall not exceed manufacturer's recommendations.
 - d. Position the roofing membrane, then cut a hole for the food drain to allow 1/2 inch - 3/4 inch of membrane extending inside the clamping ring past the drain bolts.
 - e. Make round holes in the roofing membrane to align with clamping bolts. Do not cut the membrane back to the bolt holes.
 - f. Place Water Block Seal on top of drain bowl where the clamping ring seats below membrane.
 - g. Install the roof drain clamping ring and clamping bolts. Tighten the clamping bolts to achieve constant compression.
- 5. Pipe Clusters and Unusual Shaped Penetrations:
 - a. Fabricate penetration pockets to allow a minimum clearance of 1" between the penetration and all sides.
 - b. Secure penetration pockets per manufacturer Details.
 - c. Fill penetration pockets with Pourable Sealer, so as to shed water.
- 6. Hot Pipes:
 - a. Protect the roof membrane and components from direct contact with steam or heat sources when the in-service temperature is in excess of 140 degrees F. In all such cases flash to an intermediate insulated "cool" sleeve per manufacturer details.
- 7. Flexible Penetrations:
 - a. Provide a weather tight gooseneck set in Water Block Seal and secured to the deck.
 - b. Flash in accordance with manufacturer Details.
- 8. Scuppers:
 - a. Remove existing scupper and provide a new welded watertight scupper or clean the existing scupper for reuse.
 - b. Set welded watertight scupper in Water Block Seal and secure to the structure.
 - c. Flash in accordance with manufacturer Details.
- 9. Expansion Joints:
 - a. Install as shown on roof drawings in accordance with manufacturer details.

3.06 WATER CUT-OFF

- A. At the end of the day's work, and when precipitation is eminent, a water cut-off shall be constructed at all open edges. Construct the cut-off with the same membrane that is used for the roofing system. Cut-off must be able to withstand extended periods of wet weather. The water cut-off shall be completely removed prior to resuming the installation of the roofing system. Hot asphalt cut-offs are not permitted.
- B. Remove all membrane and insulation damaged by waterstop installation, or infiltration of water around waterstop, prior to resuming work.
- C. If inclement weather occurs while a temporary waterstop is in place, monitor the situation as necessary to maintain a watertight condition.

- D. If any water is allowed to enter under the newly completed roofing, remove and replace the affected area and repair all damage at no additional cost to Owner.

3.07 CLEAN UP

- A. Clean up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations. Do not allow any material into roof drains, gutters and downspouts.
- B. Remove markings from finished surfaces.
- C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.08 PROTECTION

- A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs, structures, vehicles and utilities.
- B. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8 inch thick.

3.09 FIELD CONTROL

- A. Field inspection will be performed as outlined elsewhere in this Section, under Part 1 - Manufacturer Certifications and Inspections.
- B. Correct all punchlist items from Architect and Manufacturer's Field Representative prior to demobilization from the project.

SUBMITTAL CHECKLIST

- 1. Compliance Confirmation.
- 2. Samples.
- 3. Product Data.
- 4. Shop Drawings.
- 5. Certificates.
- 6. Warranty.

END OF SECTION 07 53 00.01

SECTION 07 60 00 - FLASHING, SHEET METAL AND ROOF ACCESSORIES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The extent of each type of flashing and sheet metal work is indicated on the drawings and by provisions of this section.
- B. The types of work specified in this section include, but are not limited to, the following:
 - 1. Metal edge flashing.
 - 2. Exposed metal trim/fascia units.
 - 3. Miscellaneous sheet metal accessories.
 - 4. Metal gutters.
 - 5. Metal downspouts.
 - 6. Sheet metal flashing at windows and exterior doors.
 - 7. Roof vents.
- C. Gutters and downspouts may be either aluminum or galvanized steel as approved by the Architect.

The intent is that all metal work shall have the same and consistent finish so as to appear as a cohesive installation. Coordinate with coping, fascia, soffits, flashings, trim, etc.

1.02 QUALITY ASSURANCE

- A. Sheet metal flashing and trim shall conform with recommended practices contained in "Architectural Sheet Metal Manual", Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

1.03 SUBMITTALS

- A. Shop Drawings:

Show typical details of formed configuration, seams, joints, thicknesses, dimensions, fastening and anchoring methods.

- B. Samples:

- 1. 6 inch x 6 inch piece of metal and each type fastener.
- 2. Colors to be selected from manufacturer's entire standard selection.

1.04 JOB CONDITIONS

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Insure best possible weather resistance and durability of the work and protection of materials and finishes.

- B. Do not proceed with the installation of flashing and sheet metal work until curb and substrate construction, cant strips, blocking and other construction to receive the work is completed.

1.05 WARRANTY

- A. The Project warranty provided by the Contractor shall include agreeing to repair or replace sheet metal and flashing which has failed to fulfill performance requirements of waterproofing due to defective materials, workmanship or improper installation, during the warranty period.

1.06 FINISHES

- A. As shown on the Drawings or as selected from manufacturer's entire selection.
- B. All colors and finishes are to be as selected by Architect.
- C. Custom color may be required to produce a match to that selected or to match existing building materials.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Stainless Steel:
 - 1. ASTM A 167, soft temper, Type 304.
 - 2. 26 gauge (.018 inches) sheet.
 - 3. Finish 2D, dull; ASTM A 480.
- B. Galvanized Steel:
 - 1. ASTM A 525, coating G90.
 - 2. Thickness (minimum):
 - a. 18 gauge.
 - b. 26 gauge flashing.
 - c. 24 gauge gutters.
 - d. 22 gauge, downspouts.
- C. Aluminum:
 - 1. ASTM B 209, Alloy 5005-H134.
 - 2. Thickness (minimum):
 - a. .032 inches, or as otherwise indicated on Drawings.
 - b. .032 inches, gutters.
 - c. .032 inches, downspouts.
 - 3. Finish: Fluoropolymer enamel.

D. Fasteners:

1. Stainless Steel nails, flat-head.
2. Galvanized steel, hot dipped, flat head.
3. Hard copper, brass or bronze, flat-head, 12 gauge for copper and lead coated copper.

E. Cleats:

1. 2 inches wide, 3 inches long piece of sheet metal.
2. 16 oz., unless otherwise specified.

F. Bituminous Paint:

1. Asphalt emulsion, ASTM D 1187, Type A.

G. Sealant:

1. One-part butyl rubber sealant, FS TT-S-00657, Type 1.

H. Metal Accessories:

1. Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, non-corrosive, size and gauge required for performance.

I. Coil Stock:

1. "Alcoa Aluminum" with Almalure 2000, 2-coat acrylic topcoat resin.

2.02 FABRICATION

A. Form metal flashing and trim to configurations indicated on the Drawings, free from defects which impair strength or mar appearance.

B. Seams:

1. Make seam in direction of flow.
2. Seams must be soldered or locked, unless otherwise approved.
3. Gutter and downspout seams may be lapped.
4. Standing seams shall finish not less than 1" high unless otherwise specified.
5. Flat-Lock Seams, Soldered and unsoldered: Finish not less than 3/4" wide.
6. Lap Seams, Soldered: Finish not less than 1" wide.
7. Lap Seams, Unsoldered: Overlap 3" unless otherwise noted.
8. Loose-Lock Seams, Unsoldered: 3" common, or hook, seam, filled with sealant.

C. All exposed edges not seamed shall be hemmed, bent back 1/2 inch to unexposed side.

- D. Furnish edge strips where sheet metal extends over edges and where necessary to secure sheet metal work at fascia, gravel stops, etc. Form edge strips of compatible material.

2.03 ROOF VENTS

- A. Provide products, as approved by the Architect, by one of the following approved manufacturers:
 - 1. "Air Vent, Inc.", Roof Louvers, Slant-Back Metal Roof Vent.
- B. Product:
 - 1. Heavy-duty aluminum construction.
 - 2. Insect screen.
 - 3. Installation flashing flange at entire perimeter.
 - 4. 50 square inches of net free area per unit.
 - 5. Provide appropriate unit as required for roof pitch condition.
 - 6. Finish: Galvanized.
 - 7. Color: Field-finish paint to match roofing.

PART 3 - EXECUTION

3.01 GENERAL

- A. Examine all surfaces to receive the metal flashing and trim. Verify all dimensions of in-place and subsequent construction. Installation of metal flashing and trim constitutes acceptance of the existing conditions.
- B. Surfaces to which sheet metal is to be applied shall be smooth, sound, clean, dry and free from defects that might affect the application.
- C. Erect all members plumb, level and in line securely anchored and properly related to other parts of the Work.
- D. Protect metal surfaces which are to be in contact with dissimilar metals, with wood or other absorptive material, with roofing felt, building paper or a coat of bituminous paint specified to prevent galvanic or corrosive action. Protection shall not extend onto exposed surfaces.

3.02 INSTALLATION

- A. Cleats:
 - 1. Where required to retain flashing, provide cleats specified, spaced not more than 12 inches o.c. Secure one end with two nails and fold clip back over nail heads. Lock free end of cleat into seam or into folded edge of sheet metal.
- B. Roof Penetration Flashing:

1. Base Flashing:
 - a. Extend flange onto roof 6 inches minimum away from penetration.
 - b. Extend Flange upward around penetration to at least 2 inches above floor line.
 - c. Fold back upper and side roof flange edges 1/2 inch minimum.
 - d. Solder lap joints.
 2. Counterflashing:
 - a. Provide sealant around penetrations through flashing.
- C. Drip Edge:
1. Extend 4 inches wide up from eave edge full eave length.
 2. Set into asphalt flashing cement, full width.
 3. Secure with aluminum annular ring nails 12 inches o.c.
- D. Rake Flashing:
1. Extend horizontal flange 3 inches under roofing and nail to substrate.
 2. Extend vertical face of fascia.
 3. Lap seam joint in direction of flow.
- E. Gutters:
1. 5", D-Style profile, unless otherwise indicated.
 2. Continuous 10'-0" lengths with 6" splice plate to allow thermal movements.
 3. Lap joints 1 inch minimum and rivet.
 4. Fabricate outer edge 1/2 inch minimum lower than back edge.
 5. Stiffen outer edge with hemmed return.
 6. Secure end caps with 1 inch minimum width flanges riveted and sealed.
 7. Secure gutter with matching metal straps spaced 2 feet apart maximum.
 8. Locate and shape outlet thimble to fit downspouts and extend 2 inches below gutter soffit.
 9. Rivet and seal thimble flanges to gutter bottom.
- F. Downspouts:
1. 3" x 4", plain square profile, unless otherwise indicated.
 2. Form with flat sheet material, plain rectangular size indicated.
 3. Fabricate longitudinal joints with flat lock seams.
 4. Telescope upper sections onto lower sections 1-1/2 inches minimum.
 5. Rivet and solder.
 6. Attach to wall with 1 inch wide straps matching downspout material, 1 gauge heavier.
 7. Locate straps at downspout tops, bottoms, and at 10 feet maximum centers.
 8. Secure straps to wall with fastener heads covered with strap tabs.
 9. Fit strainers tightly in each downspout.

3.03 CLEANING AND PROTECTION

PROJECT NO. 24-220.01
FHB - Buckman St. Branch - 2025 Renovations
First Harrison Bank

FLASHING, SHEET METAL AND ROOF ACCESSORIES
07 60 00 - 6
04/30/2025

- A. Remove all flux, scraps and dirt as work progresses. Neutralize excess flux with a 5 to 10 percent solution of washing soda and surface drenched with clean water.
- B. Protect flashing and sheet metal work during construction to insure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

SUBMITTAL CHECK LIST

- 1. Shop Drawings.
- 2. Samples.

END OF SECTION 07 60 00

SECTION 07 92 00 - JOINT SEALERS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The extent of each form and type of joint sealer as indicated on the Drawings and specified herein.
- B. Types of joint sealants specified herein include:
 - 1. Elastomeric Sealants.
 - 2. Non-Elastomeric Sealants and Caulking Compounds.
- C. In general, all joints are to have joint sealers, including but not limited to the following:
 - 1. Sidewalk Joints.
 - 2. Expansion and control joints.
 - 3. Flashing and coping joints.
 - 4. Interior wall/ceiling/door/window frame joints.
 - 5. Joints between dissimilar materials.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Refer to Division 3 - concrete surfaces.
- B. Refer to Division 8 - sections for glazing requirements.
- C. Refer to sections of Division 22, 23 and 26 for joint sealers in mechanical and electrical work.

1.03 QUALITY ASSURANCE

- A. Except as otherwise indicated, joint sealers are required to establish and maintain airtight and waterproof continuous seals on a permanent basis, within recognized limitations of wear and aging as indicated for each application. Failures of installed sealers to comply with this requirement will be recognized as failures of materials and workmanship.

1.04 SUBMITTALS

- A. Product Data:
 - 1. Submit manufacturer's product specifications, handling/installation/curing instructions and performance tested data sheets for each elastomeric product required.

2. Submit certified test reports for elastomeric sealants on aged performances as specified, including hardness, stain resistance, adhesion, cohesion or tensile strength, elongation, low-temperature flexibility, compression set, modulus of elasticity, water absorption, and resistance (aging, weight loss, deterioration) to heat and exposures to ozone and ultraviolet light.

B. Samples:

1. Submit color charts for selection.
2. Colors to be selected by Architect from manufacturer's entire selection.
3. Multiple colors may be selected for differing substrates and/or conditions throughout the project.

1.05 JOB CONDITIONS

- A. Do not proceed with installation of liquid sealants under unfavorable weather conditions. Install elastomeric sealants when temperature is in lower third of temperature range recommended by manufacturer for installation.

1.06 WARRANTY

- A. The Contractor shall provide a warranty against failure of sealant materials and workmanship including replacement of other materials damaged as a result of sealant failure for five (5) years from the date of Substantial Completion. Typical for all sealants at all locations and conditions, unless otherwise indicated.

PART 2 - PRODUCTS

2.01 GENERAL

A. General Sealer Requirements:

1. Select materials for compatibility with joint surfaces and other indicated exposures, and except as otherwise indicated, select modulus of elasticity and hardness or grade recommended by manufacturer for each application indicated.
2. Where exposed to foot traffic, select non-tracking materials of sufficient strength and hardness to withstand "stiletto" heel traffic without damage or deterioration of sealer system.
3. Provide colors as selected by Architect from the manufacturer's entire available color selection. Colors are to be selected for each differing material and condition. Various colors of each product are to be expected.

2.02 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, by one of the following approved manufacturers:

1. Manufacturers of Elastomeric Sealants (Liquid):
 - a. "Sonneborn / BASF Building Systems"
 - b. "Tremco, Inc."
 - c. "Capital Services"
 - d. "DOW Corning"
2. Manufacturers of Non-Elastomeric Sealants (Liquid/Tape):
 - a. "Sonneborn / BASF Building Systems"
 - b. "Tremco, Inc."
 - c. "Capital Services"
 - d. "DOW Corning"
3. Manufacturers of Joint Fillers/Sealant Backers:
 - a. "Sonneborn / BASF Building Systems"
 - b. "Backer Rod Mfr. & Supply Co."
 - c. "Williams Products, Inc."

2.03 ELASTOMERIC SEALANTS

- A. For use at interior/exterior joints subject to movement: control joints, expansion joints, etc.
- B. Multi-Component Polyurethane Sealant: Except as otherwise indicated, provide manufacturer's standard, non-modified, 2-or-more-part, polyurethane-base, elastomeric sealant; complying with ASTM C920 Type M Class 25, non-sag grade/type.
- C. Modulus and Hardness: Where self-leveling grade/type is required, provide sealant with cured modulus of elasticity at 100% elongation of not more than 150 psi (ASTM D 412 test procedure), and Shore A hardness of not less than 55 (ASTM D 2240). Where non-sag grade/type is required, provide sealant with cured modulus of elasticity at 100% elongation of not more than 75 psi and Shore A hardness of 20 to 30.
- D. Tear Resistance: Not less than 50 lb. per inch (ASTM D 624).
- E. Acceptable Products:
 1. "Sonneborn", Sonolastic NP 1.
 2. "Sonneborn", Sonolastic NP 2.
 3. "Sonneborn", Sonolastic SL I.
 4. "Tremco", Dymeric.

2.04 NON-ELASTOMERIC SEALANTS AND CAULKING COMPOUNDS

- A. For general use as an exposed building construction sealant provide acrylic terpolymer, solvent-based, one-part, thermo-plastic sealant compound; solids not less than 95% acrylic.
- B. Performance Standard: Comply with either ASTM C 920 Type S Class 12-1/2 Grade NS or Class B Type Non-Sag.

- C. Bond and Cohesion: Comply with ASTM C 910, with less than 0.50 square inches of combined cohesion and bond failure for three (3) samples.
- D. Acceptable Products:
 - 1. "Sonneborn", Sonolac.
 - 2. "Tremco", Mono.

2.05 MISCELLANEOUS MATERIALS

- A. Joint Primer/Sealer:

Provide type of joint primer/sealer recommended by sealant manufacturer for joint surfaces to be primed or sealed.

- B. Bond Breaker Tape:

Provide Polyethylene tape or other plastic tape as recommended by sealant manufacturer; to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

- C. Sealant Backer Rod:

Provide compressible rod stock of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended by sealant manufacturer for back-up of, and compatibility with sealant.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Examine substrates, (joint surfaces) and conditions under which joint sealer work is to be performed. Do not proceed with joint sealer work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Clean joint surfaces immediately before installation of sealants. Remove dirt, insecure coating, moisture and other substrates which could interfere with bond of sealant. Etch concrete and masonry joint surfaces as recommended by sealant manufacturer. Roughen vitreous and glazed joint surfaces as recommended by sealant manufacturer.
- B. Set joint filler units at depth or position in joint as indicated to coordinate with other work, including installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between ends of joint filler units.

- C. Install sealant backer rod for liquid-applied sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for application indicated. Install backer rod at all areas required for proper installation of sealant.
- D. Install backer rods at any location necessary for proper installation of all sealants, whether shown on drawings or not.
- E. Install bond breaker tape where indicated and where required by manufacturer's recommendations to insure that liquid-applied sealants will perform as intended.
- F. Employ only proven installation techniques, which will insure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill joints with sealant to a slightly concave surface slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and vertical surfaces, fill joint to form a slight cove, so that joint will not trap moisture and dirt.
- G. Install liquid applied sealant to depths as shown or, if not shown, as recommended by sealant manufacturer but within the following general limitations:
 - 1. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2 inch deep nor less than 1/4 inch deep.
 - 2. For joints sealed with non-elastomeric sealants and caulking compounds, fill joints to a depth in range of 75% to 125% of joint width.
- H. Do not allow sealants or compounds to overflow from confines of joints, or to spill onto adjoining work, or to migrate into voids of exposed finishes. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.
- I. Do not overheat or reheat hot-applied sealants.

3.03 PROTECTION

- A. Cure sealant compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.
- B. Protect joint sealers during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of substantial completion. Replace or restore sealants which are damaged or deteriorated during construction period.

SUBMITTAL CHECK LIST

- 1. Product Data.
- 2. Warranty.

END OF SECTION 07 92 00

SECTION 08 11 13 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Hollow metal doors and frames as shown on the Drawings and specified herein, including:
1. Hollow steel doors and frames.
 2. Hollow steel frames for wood doors.
 3. Rough bucks, frame reinforcing, door reinforcing, door insulation, closer reinforcements, clip angles and anchorage.
 4. Factory prime paint finish.
 5. Grouting of hollow metal frames with masonry mortar where not covered under other Sections.

1.02 REFERENCES

- A. The following standards, tests and publications may be referred to herein and are applicable to this Section:
1. ANSI A250.8-1998/SDI-100 - Recommended Specifications - Standard Steel Doors and, Steel Door Institute, unless herein specified.
 2. UL 10C-98 and UBC 7-2 – Positive Pressure Fire Tests of Door Assemblies.
 3. NFPA-80-1999 – Standard for Fire Doors and Windows.
 4. NFPA-101-1997 – Life Safety Code.
 5. NFPA-105 – Standard for Smoke and Draft Control Assemblies.
 6. ASTM-A 366-95A – Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.
 7. ASTM-A 568-95 – Specification for Steel, Sheet, Carbon, and High Strength, Low-Alloy, Hot-Rolled, and Cold-Rolled.
 8. ASTM-A 569-91a – Specification for Steel, Carbon, (0.15 maximum percent), Hot-Rolled Sheet and Strip Commercial Quality.
 9. ASTM-A 924-95 – General Requirements for Steel Sheet, Metallic Coated by the Hot-Dip Process.
 10. SDI-105-92 – Recommended Erection Instructions for Steel Frames.
 11. ANSI A115.1-.18 - Specification for Door and Frame Preparation for Hardware.
 12. ANSI A156.7 - Standard Template Hinge Dimensions.

1.03 SUBMITTALS

- A. Product Data:
1. Manufacturer's specifications for fabrication and installation, including data substantiating products comply with requirements.
 2. Manufacturer's published product data sheets.

B. Shop Drawings:

1. Show type of door and frame for each opening, sections of all typical members, dimensioned elevations, anchors, reinforcements and other required components.
2. Preparation for installing hardware and glazing.

1.04 QUALITY ASSURANCE

- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.
- B. Wind Load Performance Requirements: Comply with wind load requirements of the applicable State Building Code. Deflection shall not exceed 1/175 of span.
- C. Supplier Qualification: Qualified direct distributor of products to be furnished. The distributor shall have in their regular employment an A.H.C./C.D.C. or person of equivalent experience who will be available at reasonable times to consult with the Architect, Contractor and/or Owner regarding any matters affecting the total door and frame openings.
- D. Installer Qualification: Experience with installation of similar materials.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, handle and store doors and frames at the job site in such a manner as to prevent damage.
- B. Remove all damaged or otherwise unsuitable doors and frames.
- C. Deliver hollow metal doors in manufacturer's protective covering. Handle hollow metal with care to prevent damage.
- D. Door Storage: Store doors in upright position, under cover. Place doors on at least 4 inch high wood sills or on floors in manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create humidity chamber and promote rusting. If corrugated wrapper on door becomes wet, or moisture appears, remove wrapping immediately. Provide 1/4-inch space between doors to promote air circulation.
- E. Frame Storage: Store frames under cover on 4 inch wood sills on floors in manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create humidity chamber and promote rusting. Store assembled frames in vertical position, 5 units maximum in stack. Provide 1/4-inch space between frames to promote air circulation.
- F. Deliver doors and frames to the jobsite in stages or shipments as required for phasing, and in a timely manner so as not to delay progress of other trades.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. Provide products, as approved by the Architect, by one of the following acceptable manufacturers:

1. Atlas Companies.
2. CECO Door Products.
3. Curries.
4. Deansteel Manufacturing Company, Inc.
5. Fenestra.
6. Kewanee Corporation.
7. Mesker.
8. Metal Products.
9. Pioneer Industries, Inc.
10. Republic Builders Products.
11. Steelcraft Manufacturing Company.

2.02 MATERIALS

A. Cold-Rolled Steel Sheets:

1. Commercial quality, stretcher leveled flatness, cold-rolled steel, free from scale, pitting or other surface defects.
2. Complying with ASTM A 366 and ASTM A568.

B. Galvanealed Steel Sheets:

1. ASTM A924, A60 zinc coating.
2. Use galvanealed steel sheets at the following locations, whether indicated or not:
 - a. All exterior doors and door frames.
 - b. All doors and frames in kitchens, locker rooms and restrooms.
 - c. All doors and frames in or directly exposed to swimming pool areas.
 - d. All doors and frames in any other area that is exposed to moisture for long periods of time.
 - e. All door louvers and other components within doors that require galvanealed steel sheets.
3. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM-A569.

C. Supports and Anchors:

1. Fabricate of not less than 16-gauge galvanized sheet steel.
2. Provide all blocking, backings and supports in all horizontal and vertical members as required for reinforcing of all door hardware as specified in Section 08 71 00.

D. Inserts, Bolts and Fasteners:

1. Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls.

E. Drip Cap:

1. On all exterior door bottoms.
2. On all exterior door frame heads.

F. Primer:

1. For steel surfaces, use rust-inhibitive zinc oxide primer suitable as a base for specified finish paints.

2.03 FABRICATION

A. General:

1. Fabricate hollow metal work to be rigid, neat in appearance and free from defects, warp, or buckle.
2. Accurately form metal to required sizes and profiles.
3. Weld exposed joints continuously; grind and dress smooth.
4. Provide doors and frames bearing UL labels as scheduled. Construction similar to specified hollow metal work, modified to meet Underwrites Laboratories, Inc. requirements.

B. Galvanealed Steel Sheets:

1. ASTM A924, A60 zinc coating.
2. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM-A569.

C. Minimum Gauges of Hollow Metal:

1. Frames:
 - a. 16 gauge: Interior door frames.
 - b. 16 gauge: Typical labeled interior frames.
 - c. 16 gauge: Interior glazed window and opening frames.
 - d. 14 gauge: Exterior door frames.
 - e. 14 gauge: Typical labeled exterior frames.
 - f. 14 gauge: Exterior glazed window and opening frames.
2. Doors:
 - a. 18 gauge: Interior doors.
 - b. 18 gauge: Typical labeled interior doors.
 - c. 16 gauge: Exterior doors.
 - d. 16 gauge: Typical labeled exterior doors.
3. Accessories:
 - a. 20 gauge: Trim members.
4. Provide heavier gauges at doors, frames and accessories as required by fire rating label, details or specific condition.
5. Entire frame, sidelight and transom unit shall be of the same gauge.

D. Doors:

1. Form face sheets in smooth seamless unbroken surface. Construct doors with smooth flush surfaces, without visible joints or seams on exposed faces or stile edges. Interior and exterior door edge seams shall be full height wire welded and ground smooth.
2. Reinforce, stiffen and sound deaden.
3. Stiffen face sheet with 20-gauge steel stiffener reinforced vertically, full height and width, spot welded to both face sheets. Stiffeners welded together top and bottom.
4. Close top and bottom edges of interior and exterior doors with continuous recessed flush steel channel minimum 16 gauge, extending full width of door, and spot welded to both faces. Provide drain holes in bottom closure of exterior doors.
5. Frame openings for glazing and provide cut-outs for glass and louvers with stops as shown. Form beads of 20-gauge steel; locate on inside of opening.
6. Insulate core of all exterior doors, whether indicated or not, and interior doors where indicated:
 - a. Insulate with 1 lb minimum density insulation.
 - b. Minimum insulation value R-2 minimum.
7. Labeled Doors: Insulate as required by Underwriters Laboratories. Build in special hardware and provide astragals as indicated. At one hour and at 1-1/2 hour doors at enclosures, maximum transmitted temperature end point shall not exceed 450 degrees F above ambient at end of 30 minutes of fire exposure per U.L.
8. Exterior Hollow Metal Door Louvers: Fabricate louver units of 16-gauge galvanized steel sheets with stationary, weatherproof Z-shaped blades and U-shaped frames, not less than 1-3/8 inch thick. Space louver blades not more than 1-1/2 inch o.c. Assemble units by welding. Provide insect screen on interior side of frame, consisting of 14 by 18 wire mesh in rigid, formed metal frame.
9. Interior Hollow Metal Door Louvers: Fabricate of 20-gauge cold-rolled steel sheets with stationary sight proof inverted V-shaped blades and U-shaped frames. Space louver blades not more than 3 inches o.c. Assemble units by welding.
10. Typical Reinforcement: Provide as required for hardware items. For lock reinforcement, provide manufacturer's standard reinforcement. Provide 12-gauge reinforcement for escutcheons or roses. centering clips to hold lock case in alignment. For door checks, provide 14-gauge channel type reinforcements, 3-1/2 inch deep by 14 inches long, or as required. Hinge reinforcement to be one piece 14-gauge continuous channel welded to the door. Reinforce doors for surface items such as surface and semi-concealed closers, brackets, surface holders and door stops. Drilling and tapping installation of these surface items shall be done in field by hardware installer.
11. Provide to design indicated including: Flush panel doors, flush panel with cut-out as indicated, stile and rail type, stile and rail with door louver.
12. Finish: Provide prime coat finish on doors. Thoroughly clean off rust, grease and other impurities. Grind welds smooth, no marks shall show. Apply metallic filler as required to fill cracks and joints and to level any weld areas or similar imperfections. Sand filler coat smooth.
13. **All exterior metal doors to be Galvanealed Steel Sheets.**

E. Frames:

1. Welded Frames. Knockdown frames not permitted, except where specifically indicated by Architect.
2. Close corner joints tight with trim faces mitered and continuously welded, ground smooth.
3. Provide dust cover boxes for hinge and strike plate cutouts and at all other hardware mortises.
4. Weld temporary steel spreader to feet of both jambs, or strap pairs with heads inverted, as bracing during shipping and handling.
5. Rated frames where indicated on drawings and at all rated door openings.

6. At masonry, provide wire or masonry "T" anchors approximately 24 inches on center.
7. Provide and secure galvanized steel drip cap at all exterior doors, field painted to match frame.
8. Silencers: Provide specified silencers, except where stop does not occur and at smoke gasketed openings, 3 per jamb at single door and one for each door at double doors.
9. Extensions: Reinforce transom bars or mullions as necessary to provide rigid installation. Where required (as at multiple openings) to stabilize large frames, provide frame or mullion extensions to anchor to structure above, proper size to fit within overhead construction. Provide angle clips to fasten to structure.
10. Mullions: Provide mullions, straight and without twist, of tubular design. No visible seams will be accepted. For removable mullions provide reinforcing at frame head.
11. Clearances: Provide and be responsible for proper clearances at metal frames, including for weatherstripping, soundstripping and smoke gasketing. Glass clearance shall be thickness of glass plus clearance each side (1/8 inch minimum exterior - 1/16-inch minimum interior), adjust for installation, glass thickness to allow for glazing and sealant. Where sealed double glazing is indicated, provide rebates minimum of 3/4 inch and provide 1/4-inch clearance at glass edges. Where units fit around concrete blocks (blocks built into frames) obtain actual dimensions of blocks being used to establish minimum clearances.
12. Stops: Set with countersunk or Jackson head screws.
13. Labeled Frames: Construct in accordance with requirements for labeled work. Attach proper U.L. label, Warnok Hersey. "B" labeled frames shall be 1-1/2 hour construction.
14. Joinings: Furnish frames mitered, or coped, and continuously face welded. Grind smooth, and conceal joints for a seamless appearance. Touch up welded surfaces with manufacturer's standard prime paint.
15. Workmanship: Fabricate so no grind marks, hollow or other out-of-plane areas are visible. At joints of intermediate members (such as mullions and transom bars), provide tight joining, neatly accomplished without holes, burned out spots, weld build up or other defacing work. Fill to close cracks and to preserve shapes. Tightly fit loose stops, to hairline joints.
16. Finish: Clean frames by degreasing process and apply thorough coating of baked-on primer, covering inside as well as outside surfaces. At galvanealed frames, coat welds and other disrupted surface with zinc-rich paint containing not less than 90 percent zinc dust by weight.
17. **All exterior metal frames to be Galvanealed Steel Sheets.**

F. Hardware Preparation:

1. Mortise, reinforce, drill and tap doors and frames for mortised hardware.
2. Prepare strike jamb for 3 silencers on door side.
3. Typical Reinforcing: Provide minimum hinge reinforcement 3/16 inch by 1-1/2 inch by 10 inch. Provide similar reinforcement for hardware items as required to adequately withstand stresses, minimum 12 gauge, including channel reinforcement for door closers and closer arms, door holders and similar items. Provide reinforcement and clearances for concealed in-head door closers and for mortise locks, where applicable.
4. Anchorage: Provide standard and special anchorage items as required.
5. Cover Plates: For hinge and strike plate cutouts, provide fully enclosed pressed steel cover boxes spot welded to frames behind mortises.

G. Finish:

1. Chemically treat and apply manufacturer's standard rust inhibitive primer coat conforming to ANSI A224.1-1990.
2. Coat interior of frame with bituminous paint, minimum 1.5 mils.

3. Prep surfaces to receive finish painting in the field.

H. Fastenings:

1. Provide fastenings, anchors and clips as required to secure hollow metal work in place.
2. Provide Jackson head screws, or flatter.
3. Dimple metal work to receive screw heads.
4. Set stops and other non-structural fastenings with #6 Jackson head self-tapping screws.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine supporting structure and conditions under which hollow metal is to be installed.
- B. Verify that frame opening corresponds to dimensions of frames furnished.
- C. Check that surfaces to contact frames are free of debris.
- D. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. General:

1. Install in accordance with reviewed shop drawings and manufacturer's printed instructions.
2. Set hollow metal plumb, level, square to proper elevations, true to line and eye.
3. Units and trim shall be fastened tightly together, with neat, uniform and tight joints.

B. Anchorage:

1. Attach anchors to opening.
2. Minimum number of anchors: 3 per jamb.
3. Securely fasten and anchor work in place without twists, warps, bulges or other unsatisfactory or defacing workmanship.
4. Set clips and other anchors with Ramset "shot" anchors or drill in anchors as approved.

C. Frames:

1. Attach frames true to line with adjacent construction.
2. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
3. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
4. At cast-in-place concrete or masonry construction, set frames and secure in place using countersunk bolts and expansion shields, with bolt heads neatly filled with metallic putty, ground smooth and primed.

D. Doors:

1. Hang doors square to opening.
2. Minimum Clearances:
 - a. At head and jambs: 1/8".
 - b. Between meetings edges of pairs of doors: 1/8".
 - c. With Floor: 3/4", except 3/8" undercut at handicap accessible doors.
 - d. At Threshold: 1/4".
 - e. At Handicap Threshold: As required to coordinate with threshold height.
3. Fit hollow metal doors accurately in their respective frames, within following clearances:
 - a. Jambs and head 3/32 inch.
 - b. Meeting edges pair of doors 1/8 inch.
 - c. Sill where no threshold or carpet 1/4 inch above finished floor.
 - d. Sill at threshold 3/4 inch maximum above finished floor.
 - e. Sill at carpet 1/4 inch above carpet.

3.03 ADJUST AND CLEAN

- A. Remove dirt and excess sealants from metal surfaces.
- B. Touch up marred or abraded surfaces.
- C. Lubricate hardware and adjust moving parts to operate smoothly.
- D. Remove debris from work area.
- E. Prime Coat Touch-Up: Modify existing doors and frames to receive new door hardware.
Cut, patch, weld, bondo, and sand smooth, modified areas.
Modifications will be seamless and not noticeable. Use compatible air-drying primer.
- F. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

SUBMITTAL CHECKLIST

1. Product Data.
2. Shop Drawings.

END OF SECTION 08 11 13

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Interior flush pre-fit, pre-machined standard and fire rated type wood doors as shown on the Drawings and specified herein.

1.02 REFERENCES

- A. WDMA - Window and Door Manufacturers Association: IS 1-A 1997 Industry Standard for Architectural Flush Wood Doors.
- B. Uniform Building Code: UBC 7-2 1997 or UL10C, Positive Pressure Fire Door Assemblies.
Category "B" for single swing doors and Category "A" for pairs of swinging doors.
- C. UL: Building Materials Directory.
- D. WHI: Directory of Listed Products.
- E. ICC/ANSI-A117.1-2003: Accessible and Usable Buildings and Facilities.
- F. State and Local Building Codes including the Authority Having Jurisdiction.

1.03 QUALITY ASSURANCE

- A. Except as otherwise specified herein, wood doors shall conform with Architectural Woodwork Institute (AWI) Quality Standards and National Woodwork Manufacturer's Association (NWMA) I.S. 1 and I.S. 2.
- B. WDMA I.S. 1-A 2004 Quality Standard: Window and Door Manufacturers Association Quality Standards for grade of door, core, construction, finish, and other requirements.
- C. Manufacturer must have qualifications specializing in the manufacturing of the products specified in this Section for a period of not less than 10 years.

1.04 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Manufacturer's published catalog data, product data sheets and cutsheets.
 - 2. Certificate of compliance with NWMA I.S. 1.
 - 3. Indicate general construction, jointing methods, hardware and louver locations, locations of cut-outs for glass, thickness of veneers, materials, door swings, special blocking, stile and rail dimensions,

undercuts, and storage and installation details. Do not proceed with any fabrication until all details are approved.

B. Shop Drawings:

1. Show elevations, dimensions, construction details, glazing, cut-outs and label.

C. Samples:

1. Actual samples of wood veneer and finish.
2. Stain colors and finishes to be selected from manufacturer's entire standard selection.
3. If stains are required to be custom matched, submit samples of actual finished product, along with sample of item door was to be matched to.

D. Warranty:

1. Manufacturer's standard warranty for materials.
2. Special Warranty as specified herein.

E. Certification:

1. Submit any information necessary to indicate compliance to all of these specifications.2.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver doors to the site until building has been closed in and is thoroughly dry.
- B. Deliver pre-finished wood doors to jobsite after all door frames have been painted, and all "wet" construction has been completed.
- C. Plastic wrap and protect wood doors during transit, storage and handling, to prevent damage, soiling or deterioration. Follow the Care and Installation guidelines as described in WDMA I.S. 1-A 2004.
- D. Store doors flat and protect from damage.
- E. Do not walk or stack any materials on top of any wood doors delivered to the jobsite, and do not drag any wood doors across each other during delivery or installation.
- F. Remove damaged or otherwise unsuitable doors from the job site.

1.06 SPECIAL WARRANTY

- A. The Contractor shall warrant the wood doors to be free of faults and defects for the life of the installation.
- B. Faults and Defects:
 1. Delamination in any degree.
 2. Warp or twist of 1/4" or more, in any 7'-0" plane, in any direction.

3. Telegraphing of stile, rail, or core, through the face of the door to cause surface variation in excess of 1/100" in any 3" span.
 4. Any other defect that shall affect the operation of the door, shall be considered a defect under the provision of the warranty.
- C. Warranty to include refinishing and reinstallation that may be required due to repair or replacement of any defective doors.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, by one of the following acceptable manufacturers:
1. Algoma Hardwoods.
 2. Chappell.
 3. Eggers Industries.
 4. Graham Manufacturing.
 5. Ideal Wood Products.
 6. Marshfield Door Systems.
 7. Mohawk Flush Doors.
 8. Ohio Valley.
 9. Oshkosh.
 10. VT Industries.

2.02 FABRICATION

- A. Typical Doors, Non-Fire Rated:
1. Thickness: 1-3/4 inches.
 2. Interior flush, bonded, solid core, hardwood veneered.
 3. Door construction shall conform to WDMA I.S. 1-A 2004 Premium Grade and AWI Quality Standards Premium Grade.
 4. Core: bonded particle core (PC).
 - a. Solid particleboard bonded to the stiles and rails.
 - b. Comply with ANSI-A208-1 Grade 1-LD-2.
 5. Vertical Stiles: Hardwood to match face veneer, 1-3/8" minimum before trimming, over structural composite lumber (SCL), glued to core.
 6. Rails: Mill option hardwood or SCL. Top and bottom: 2 inches before trimming.
 7. Facing: Wood veneer cut and species as specified shall conform to WDMA I.S. 1-A 2004 "A" grade for Premium Grade Door Construction requirements.
 8. Crossbands: Hardwood, 1/16 inches thick, extending full width of door.
 9. Edge Bands: Same species as face veneer, matched for color.
- E. Provide all blocking, backings and supports in all horizontal and vertical members as required for reinforcing of all door hardware as specified in Section 08 71 00.

2.03 WOOD VENEER

A. Face Veneer:

1. Shall meet quality standards conforming to WDMA I.S. 1-A 2004 "A" grade for transparent finish.
2. Minimum face veneer thickness shall be 1/50" after finish sanding.
3. Wood Species: Select White Birch.
4. Face Cut: Plain Sliced.
5. Face Assembly: Book Match.
6. Face Symmetry: Running Match.

2.04 VISION FRAMES

A. Non-Rated Doors:

1. Flush bead wood frames, 1/2" thickness.
2. Hardwood of same species as face veneer, matched for color.

B. Glass:

1. Refer to drawings for type and thickness.
2. See Section 08 81 00 - Glass and Glazing.

2.05 FITTING AND FINISHING

A. Fitting:

1. Doors may be fitted for hardware at job site or pre-fitted and pre-machined at factory.

B. Factory Finish:

1. Generally, all doors shall be prefinished at the factory, unless indicated as field stained or a custom stain match is required.
2. Selected finish color must be able to be matched.
3. Transparent Finish shall match finish requirements indicated in AWI-"TR6".
4. Comply with referenced AWI "Factory Finishing" for Premium Grade factory finish systems.
5. Finish wood doors using three coats of water-clear, 100% solids, modified acrylic urethane, cured immediately with ultra-violet light. Factory seal all doors on all 6 sides.

C. Coordination:

1. Finish or stain doors before hanging.
2. Variations in finish due to body oils on doors, planer marks or other irregularities not attributable to natural wood grain variations will be cause for rejection.

2.06 ADHESIVES

A. Adhesives:

1. Face to core adhesives shall be Type I or Type II as appropriate for location in building.
2. All adhesives must be classified Type I or Type II per WDMA TM-6 "Adhesive Bond Test Method."
3. Use Type I adhesives for doors in exterior applications.
4. Use Type II adhesives for doors in interior applications.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine door frames and verify that frames are correct type and have been installed as required for proper hanging of corresponding doors. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb, square, and level jambs and heads.

3.02 INSTALLATION

- A. Condition doors to average prevailing humidity in installation area prior to hanging. Install doors after building humidity is at an acceptable level.
- B. Handle doors in accordance with recommendations of WDMA I.S. 1-A, "Care and Installation at Job Site".
- C. Install wood doors in strict accordance with manufacturer's published instructions and as shown.
- D. Install accurately in frame. Install within the clearances specified in the manufacturer's written instructions. Install plumb, level, square and true.
- E. Install to operate freely, but not loosely, free from hinge and strike binding conditions. All doors shall be free from rattling when in the latched position.
- F. Pilot holes to be drilled for screws attaching hinges, locksets, and all other hardware to be installed on the doors. Pilot holes shall not exceed 90% of the diameter of the screw.
- G. Remove and replace all doors found to be warped, twisted, bowed, or otherwise damaged. Do not install doors which cannot be properly fitted to frames.
- H. Adjust pre-finished doors and hardware and other moving or operating parts to function smoothly and correctly.
- I. Bevel non-fire rated doors 1/8 inch in 2 inches lock and hinge edges.

- J. Fit to frames and machine for hardware to whatever extent not previously worked at factory as required for proper fit and uniform clearance at each edge.
- K. For non-rated doors provide the following clearances:
 - 1. 1/8 inch at jambs and heads.
 - 2. 1/2 inch at floor finish or covering.
- L. For installation of hardware, See Division 08710 - Finish Hardware.

3.03 ADJUST AND CLEAN

- A. Rehang or replace doors which do not swing or operate freely.
- B. Refinish or replace doors damaged during installation.
- C. Protect installed wood doors from damage or deterioration until Substantial Completion.
- D. Adjust doors for a smooth, balanced, fully functional opening.
- E. Clean pre-finished doors and hardware.

SUBMITTAL CHECKLIST

- 1. Manufacturer's Literature.
- 2. Shop Drawings.
- 3. Samples.
- 4. Warranty.
- 5. Certification.

END OF SECTION 08 14 16

SECTION 08 31 13.01 - ACCESS DOORS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Metal access doors as shown on the Drawings and specified herein, including:

1. Access doors in walls.
2. Access doors in ceilings.

1.02 QUALITY ASSURANCE

- A. Use manufacturer's standard size units for nominal sizes indicated. Field coordinate actual unit sizes with rough openings and built-in anchors and inserts.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job in manufacturer's unopened packages with labels intact.
- B. Store and handle products so as to prevent damage. Remove all damaged items from the job site.

1.04 SUBMITTALS

- A. Product Data:
1. Manufacturer's published catalog information, product data sheets and cutsheets.
 2. UL fire rated test data stating achieved rating.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, from one of the following acceptable manufacturers:
1. Babcock-Davis.
 2. Bilco.
 3. Dayton.
 4. J.L. Industries.
 5. Karp Associates, Inc.
 6. Milcor Incorporated.
 7. Vestal Manufacturing Co.

2.02 MATERIALS

A. Access Doors:

1. Door: 14 gage steel.
2. Frame: 16 gage steel with 1 inch flange.
3. Hinge: Concealed spring type, 175 degree opening.
4. Lock: Screwdriver activated cam lock.
5. Finish: Gray baked enamel prime coat. Prepped for finish field coats.
6. Sizes: 20 inches x 40 inches minimum at attic access, unless otherwise indicated on Drawings.
24 inches x 24 inches all other locations, unless otherwise indicated on Drawings.

B. Exterior Access Doors:

1. Door: 14 gage galvanized steel.
2. Frame: 16 gage galvanized steel with 1 inch flange.
3. Hinge: Concealed spring type, 175 degree opening.
4. Lock: Screwdriver activated cam lock.
5. Finish: Gray baked enamel prime coat. Prepped for finish field coats.
6. Sizes: 24 inches x 24 inches all other locations, unless otherwise indicated on Drawings.

2.03 FABRICATION

- A. Fabricate units of continuous welded construction.
- B. Neatly fit all joints, and grind welds smooth and flush with adjacent surfaces.
- C. Furnish each access door as a complete unit with all parts ready for installation.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Field verify all rough opening dimensions.
- B. Assure that sufficient inserts, blocking and built-in anchors are provided for secure installation of doors.

3.02 INSTALLATION

- A. Install per manufacturer's recommendations.
- B. Painting of doors is specified in Section 09 90 00.

3.03 ADJUSTING AND CLEANING

- A. Adjust hardware so that all doors operate smoothly and freely.
- B. Remove and replace panels or frames which are bowed, warped or damaged.

3.04 PROTECTION

- A. Protect doors from damage until Substantial Completion.

SUBMITTAL CHECKLIST

- 1. Product Data.

END OF SECTION 08 31 13.01

SECTION 08 41 13 - ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete the aluminum thermal-type and non-thermal type Entrances and Storefronts as shown on the Drawings and specified herein.

1.02 QUALITY ASSURANCE

- A. Comply with all Federal, State and Local building codes and regulations.
- B. Thermal Performance:
 - 1. AAMA Test Procedure 1502.7.
 - 2. Condensation Resistance Factor (CRF) of 43 (min.) at equivalent of 15 MPH wind velocity.
- C. Air Infiltration:
 - 1. ASTM E283.
 - 2. Maximum infiltration .06 CFM/ft. crack length under static pressure of 6.24 PSF (equivalent of 50 MPH wind velocity).
- D. Water Infiltration:
 - 1. ASTM E331.
 - 2. No water penetration for 15 minutes with 5 gal./hr./s.f. at 10.0 PSF pressure.
- E. Uniform Loading:
 - 1. ASTM E-330.
 - 2. Max. 1/175 deflection, no permanent deformation under a load of 25 PSF.

1.03 SUBMITTALS

- A. Shop Drawings:
 - 1. Submit complete shop drawings prior to fabrication.
 - 2. Indicate metal thickness, construction, installation and anchorage details.
- B. Samples:
 - 1. Section of window wall assembly with glass.
 - 2. If finish is selected, submit sample of finish indicated.

C. Test Reports:

1. Submit test reports certified by the mullion manufacturer's testing laboratory.
2. Show compliance with performance requirements.

D. Warranty:

1. Submit warranty as specified herein.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver, handle and store doors and frames at the job site in such a manner as to prevent damage.
- B. Remove all damaged or otherwise unsuitable doors and frames from the job site.

1.05 WARRANTY

- A. Provide written manufacturer's guarantee against defective workmanship and materials for a period of two (2) years.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide thermal barrier type mullion window and door system, to be approved by the Architect, as manufactured by one of the following approved manufacturers:
 1. "EFCO"
 2. "Kawneer"
 3. "Tubelite"
 4. "Vistawall"
 5. "United States Aluminum"
 6. "Traco"
 7. "Wausau Window and Wall Systems"
 8. "Arch Aluminum and Glass"
 9. "YKK AP"
 10. "Manko Window Systems"
 11. "Graham Architectural Products"
- B. Clarification that any/all aluminum window, curtain walls and entrances and storefronts in the scope of work are to all be provided by a single source manufacturer for the entire project.

C. Basis of Specification:

1. Window Wall Systems:
 - a. "EFCO", Series 403 (T), Thermal Storefront Framing.
Provide at all locations exposed directly to the exterior.
 - b. "EFCO", Series 402 (NT), Non-Thermal Storefront Framing.
Provide at all locations interior to the building, including interior unit of vestibules, unless otherwise indicated.
2. Door Systems:
 - a. Wide Stile: "EFCO", Series D500 Wide Stile Doors, 1-3/4" Standard Doors.
 - b. Custom modified to provide for widths and depths of stiles and rails as indicated on the Drawings, Door Elevations, and as specified herein.

2.02 MATERIALS

A. Aluminum Extrusions:

1. ASTM B 221.
2. Alloy 6063-T5.
3. Finish:
 - a. Class 1, Clear Anodic Coating, AA-M12C22A41.
 - b. Class 1 Anodic Coating with integral color, AA-M12-C22, Color: Black.
 - c. Refer to Drawings for finish locations.

B. Aluminum Sheets:

1. ASTM B209.
2. Alloy 5005 where exposed, 3003 where concealed.
3. Finish: Match extrusions.

C. Fasteners and Anchors:

1. Stainless steel or aluminum, finish to match extrusions at exposed fasteners.

D. Glass:

1. 1 inch insulating glass for all exterior glass applications.
2. 1/4 inch glass for all interior applications and all door units.
3. See Section 08 81 00 for glass specifications.
4. See drawings for window, door and frame elevations.

E. Thermal Break:

1. Poured polyurethane or PVC, standard with manufacturer.
2. 3/8 inch minimum thickness.

F. Setting Blocks:

1. As specified in Section 08 81 00.
- G. Glazing Gaskets:
 1. Elastomeric gaskets of type recommended by window manufacturer.
- H. Glazing Tape:
 1. Shimmed polymer type recommended by window manufacturer.
- I. Perimeter Joint Sealer:
 1. As specified in Section 07 92 00.
- J. Backup Joint Filler:
 1. Closed-cell expanded polyethylene, as specified in Section 07 92 00.
- K. Joint Cleaner:
 1. Cleaner recommended by sealant manufacturer for the specified joint surface condition.
- L. Joint Primer and Sealer:
 1. Compounds recommended by sealant manufacturer for the specific joint surface conditions.
- M. Bond Breaker:
 1. Polyethylene tape.
- N. Weatherstripping:
 1. Neoprene, hypalon, vinyl, PVC, as standard with manufacturer, double row, continuous with vulcanized corners.
- O. Subsill:
 1. High Performance extruded aluminum with thermal break, and integral weep hole system.
- P. Provide all blocking, backings and supports in all horizontal and vertical members as required for reinforcing of all door hardware as specified herein or in Section 08 71 00.
- Q. Hardware:
 1. See Section 08 71 00 – Finish Hardware for all other items not listed herein.
 2. Cylinder Collars: Anodized aluminum. Cylinder specified in Section 08 71 00.
 3. Weatherstripping (Provide on all exterior doors):
 - a. Vinyl, Neoprene, EPDM, TPE (thermoplastic elastomer), or silicone.
 - b. Full length and width of opening at each condition.

- c. Provide weatherstripping seal sets at entire perimeter jambs and head of all exterior doors, whether scheduled or not.
- d. All weatherstripping sets shall be determined by the door hardware supplier as appropriate to the application and able to provide a weather-tight and weather-proof seal, while allowing proper operation of the door and all other hardware.
- e. Jambs and Head:
Manufacturer's standard type per requirements of this specification herein.
- f. Door Bottom Sweep:
- g. Vinyl, Neoprene, EPDM, TPE (thermoplastic elastomer), or silicone weathersweep, screw applied to door with concealed fasteners. Finish to match door.

2.03 FABRICATION

A. Window Wall Members:

- 1. Main extruded members: Minimum thickness .075 inches minimum.
- 2. Vertical and horizontal framing members: 2 inches nominal face dimension.
- 3. Perimeter members: 2 inches nominal face dimension.
- 4. Overall depth: 4-1/2 inches nominal.

B. Door Members:

- 1. Minimum Thickness: .075" minimum.
- 2. Overall Depth: 1-3/4 inches nominal.
- 3. Vertical Stiles: Provide as indicated on Drawings or Door Elevations (modified wide stile).
If not indicated, provide 5 inches nominal width (wide stile).
Reinforce for continuous hinges specified herein or in Section 08 71 00.
- 4. Top Rail: Provide as indicated on Drawings or Door Elevations (modified wide stile).
If not indicated, provide 5 inches nominal width (wide stile).
Reinforce for closers or holders specified herein or in Section 08 71 00.
- 5. Intermediate Panic Rail: Provide as indicated on Drawings or Door Elevations (modified wide stile).
If not indicated, provide 6 inches nominal width.
Location to be centered on panic device with dimension as required by Code and ADA.
Reinforce for panic devices specified herein or in Section 08 71 00.
- 6. Bottom Rail: 10 inches nominal width (modified). Accessory line as required for extra tall rail.

C. Thermal Break:

- 1. Provide thermal break on all window members.
- 2. Poured in place, self-adhering elastomer.
- 3. Do not violate or bridge the thermal break with hardware or fasteners.

D. Preassemble all units to the greatest extent possible to minimize field jointing and assembly at the site. Disassemble units only to the extent necessary to comply with shipping limitations.

E. Fabricate all units to produce uniform sight lines and to be level, plumb, and in same plane as adjacent panels.

F. Accurately fabricate all joints for proper fit and weld all corners.

- G. Provide slotted holes or other acceptable means for erection adjustment.
- H. Protect exposed surfaces against damage from scratches and discoloration.
- I. Provide fully resilient settings for glass panels by use of neoprene gaskets on both sides of glass.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Examine all surfaces of opening and verify dimensions. Installation of frames constitutes acceptance of the existing conditions.

3.02 INSTALLATION

- A. Install window walls, doors and hardware in accordance with manufacturer's instructions.
- B. Assemble and anchor the various components to allow for expansion and contraction, maintaining a watertight condition.
- C. In general, for field assembly, conform to welding and joining requirements specified for shop fabrication.
- D. Install items plumb, straight, square, level and in their proper elevation, plane and location, and in proper alignment with other work. Employ only skilled workmen and erection.
- E. Install doors plumb and in alignment with frames. Apply hardware in accordance with hardware manufacturer's instructions. Drill and tap for machine screws. Adjust door installation for free and easy movement with uniform clearances and contact at stops.
- F. Use shims as required.
- G. Caulk perimeter after all lime, mortar, plaster and other corrosive materials have been removed from aluminum surface with solvents not harmful to finish. Provide backer rods as required.
- H. Install glass in window walls in accordance with recommendations of the mullion system manufacturer and requirements specified in Section 08 81 00.

SUBMITTAL CHECKLIST

- 1. Shop Drawings.
- 2. Samples.
- 3. Test Reports.
- 4. Warranty.

END OF SECTION 08 41 13

SECTION 08 71 00 - FINISH HARDWARE

PART 1 – GENERAL

1.01 WORK INCLUDED

Furnish labor, materials, equipment, special tools, supervision and services required to complete all Finish Hardware work as indicated, noted, detailed, and scheduled on the Drawings and specified herein.

1.02 OWNER VERIFICATION AND REVIEW MEETING

Contractor and hardware supplier are required to meet with the Owner to review and verify the hardware schedule and sets per door. Contractor and supplier shall be responsible for verifying door and hardware handings, lockset operations, and keying required. All information, except for keying, shall be included in the submittals prior to being forwarded to the Architect.

1.03 KEYING MEETING

Contractor and hardware supplier are required to meet with the Owner to review and verify all requirements for keys and keying per door. Incorporate and coordinate all locking hardware in the Project to provide for a complete and unified system of keying. A complete keying schedule shall be submitted to the Architect and Owner, for approval, within seven days after the meeting. Determine cylinders and cores required to match or be compatible with any existing building master keying systems in place as per the Owner's requirements.

1.04 QUALITY ASSURANCE

A. Hardware Supplier:

1. An established firm dealing in architectural commercial door hardware, with an office, sample room, warehousing facilities and an adequate inventory.
2. Has demonstrated a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project.
3. Supplier must have, as an employee, an experienced and certified Architectural Hardware Consultant (AHC), who is available to Owner, Architect, and Contractor, for consultation throughout the course of the Work.
4. Provide a competent technician to service the hardware on the job as may be required.
5. A regular franchised distributor for all materials required for this project.
6. Shall replace damaged or defective materials prior to shipment to the site. Repairs not acceptable.
7. Shall meet with the Owner to review and verify all requirements and keying required.
8. Shall conduct a comprehensive training class for the Owner's maintenance personnel prior to date of acceptance on all special application mechanical hardware provided under this Section.

B. All work to comply with the latest requirements of ADA, ICC/ANSI A117.1, and the accessibility chapter of the Building Code.

C. All work to comply with the latest requirements of NFPA 80, NFPA 101 and NFPA 252 in providing hardware for all fire rated openings.

1.05 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI A117.1, Providing Accessibility and Usability for Physically Handicapped People.
2. ANSI/BHMA A156.1, Butts and Hinges.
3. ANSI/BHMA A156.3, Exit Devices.
4. ANSI/BHMA A156.4, Door Controls-Closers.
5. ANSI/BHMA A156.6, Architectural Door Trim.
6. ANSI/BHMA A156.7, Template Hinge Dimensions.
7. ANSI/BHMA A156.13, Locks & Latches, Mortise.
8. ANSI/BHMA A156.16, Auxiliary Hardware.
9. ANSI/BHMA A156.18, Materials and Finishes.

B. American Society for Testing and Materials (ASTM):

1. ASTM-E2074-2001 Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies.

C. Code of Federal Regulations (CFR) Americans with Disabilities Act (ADA):

1. Latest version as adopted, approved and accepted by the State.

D. Door and Hardware Institute (DHI):

1. Keying Systems and Nomenclature.
2. Hardware for Labeled Fire Doors.
3. Sequence and Format for the Hardware Schedule.
4. Abbreviations and Symbols.

E. National Fire Protection Association (NFPA):

1. NFPA 80 Standard for Fire Doors and Windows.
2. NFPA 101 Life Safety Code.
3. NFPA 105 Recommended Practice for the Installation of Smoke-Control Door Assemblies.
4. NFPA 252 Standard Methods of Fire Tests of Door Assemblies.

F. Steel Door Institute (SDI):

1. SDI 100 Recommended Specifications for Standard Steel Doors and Frames.

G. Underwriter's Laboratories, Inc. (UL) - UL Standards for Safety:

1. UL 10C-97 Positive Pressure Fire Tests of Door Assemblies.
2. UL 228 Door Closer-Holders, With or Without Integral Smoke Detectors.
3. UL 305 Panic Hardware.

1.06 SUBMITTALS

A. Hardware Schedule:

1. Submit a completely detailed schedule of finish hardware in "Vertical Format" per the Door and Hardware Institute's Sequence and Format. Include a complete typewritten schedule indicating every item required for each door or opening. Schedules include, but are not limited to; the manufacturers, model numbers, materials, types, styles, sizes, handings, finishes, etc.
2. Numbering of hardware sets is to match those as indicated in the Specifications and as noted on the Door Schedule on the Drawings. Cross reference plans and schedules.
3. Include all prep of doors and frames required for hardware, including mounting heights, locations and dimensions.
4. Clearly indicate door sets altered from that specified.

B. Owner Verification and Review Meeting:

1. Submit with submittals, confirmation that the meeting was conducted with the Owner.
2. Include list of those present at the meeting.
3. Itemize all items resulting from discussions of the meeting in a "meeting minutes" format.
4. Review of set functions shall be done on a "per door" basis, and not merely by sets. Sets included herein is for the convenience of review by grouping like conditions and not intended to necessarily be representative of same function for all doors in the set. Verify with Owner.

C. Manufacturer's Product Information:

1. Furnish catalog cutsheets, drawings, and other descriptive data on all hardware items.
2. After final approval of the hardware by the Architect, furnish copies of submittals to door and frame suppliers and any other subcontractors and suppliers necessary for coordination and installation of door hardware complete.

D. Samples:

1. If requested by the Architect, submit one (1) sample of each different item of hardware for approval, accompanied by an itemized list showing where the different items are to be used, the manufacturer's number, the finish, sizes applicable, and the number required.
2. Submit a full sample ring of hardware finishes for all manufacturers included.
3. After review, the samples will be returned to the supplier.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver hardware or templates, or both to factory or to building as required by those furnishing items to which hardware is to be applied.
- B. Plainly mark packages or hardware so locations of use may be ascertained without breaking the packages.
- C. Deliver work so all work will progress without delay or interruption.
- D. The Contractor is responsible for providing adequate locked storage space for the scheduled quantities of hardware when delivered to the job.

1.08 PROJECT CONDITIONS

- A. The hardware supplier is responsible to examine the door and frame drawings and elevations to determine the suitability of hardware specified.
- B. It will be this supplier's responsibility to furnish the correct hardware to fit the door and frame conditions as indicated for correct and proper operation.

1.09 Warranty

- A. Furnish manufacturer's limited warranty covering defects in materials and workmanship for periods indicated as follows:
 - 1. Door Closers: Minimum Ten (10) years.
 - 2. Locksets: Minimum Ten (10) years.
 - 3. Exit Devices: Minimum Five (5) years.
 - 4. Hinges: Lifetime.
 - 5. All Other Hardware: Minimum One (1) year.

PART 2 - PRODUCTS

2.01 KEYING, KEYS, AND CORES

- A. Keying, keys, and cores will all be provided by Owner's separate vendor, Willis Klein. Contractor shall coordinate with Owner/Willis Klein as required.

2.02 LOCKS, LATCHES AND CYLINDERS

- A. Cylinders to be keyed by Willis Klein.
- B. All cylinders shall be capable of receiving Owner provided removable cores provided by Willis Klein.
- C. Provide construction cores on all doors as required.
- D. Hardware supplier must be an authorized stocking distributor of the lock they propose to furnish.
- E. Provide a cylinder for every lock requiring one, whether specifically specified or not.
- F. Unless specifically indicated otherwise, all cylinders supplied throughout the entire project are to be capable of being keyed from the same master keying system. Key cylinders in dogged panic devices, keyed removable mullions, coiling doors, overhead doors, etc. to match building master keying system.

2.03 FINISHES

- A. All finishes, typical, are to be:
Satin Chrome US26D (652 Plated Steel, 626 Plated Brass) unless otherwise indicated.
Materials unable to have this finish applied are to have a finish to closely match and compliment (aluminum, dulled chrome, clear satin anodized, satin stainless steel, mil, painted, etc.).
- B. All finishes at black anodized doors to be:
Matte Black US 19 or Flat Black US 1 unless otherwise indicated.
Materials unable to have this finish applied are to have a finish to closely match and compliment
- C. Contact Architect during bidding for any clarifications or concerns for finishes to be provided.

2.04 HARDWARE SETS

- A. Verification:
 - 1. The following schedule is intended to describe, in general, the types and quantities of hardware required for the various types of doors and for the other parts of the building which will require hardware. Do not consider this schedule as entirely inclusive.
 - 2. Hardware supplier is responsible for visiting the jobsite and reviewing the requirements for each installation. The supplier shall be responsible for providing all hardware as required to serve the door's intended purpose and intent and include all costs for such in their bid.
 - 3. Hardware supplier is responsible for coordination of all hardware items used together in conjunction with one another, mounting as required to coordinate with all doors and frames as designed, and include all costs for such in their bid.
 - 4. Hardware supplier is responsible for conducting the Owner Verification and Review Meeting, incorporating all items into submittals, and include all costs for such in their bid.
 - 5. Hardware supplier is responsible for conducting the Owner Keying Meeting, determining cylinders and cores required to match any existing building master keying system, provide and install compatible items and key per Owner's requirements.
- B. General Requirements:
 - 1. Provide all fire and smoke seals and gaskets as required per Code for all rated door assemblies and for all smoke partition assemblies; full perimeter at head, jams and bottom.
 - 2. Provide glass and materials as required to meet and maintain fire ratings for all assemblies.
 - 3. All items as listed in hardware sets are "per door", unless otherwise indicated.
 - 4. All hardware to be mounted per ADA and ICC/ANSI A117.1.

2.05 HARDWARE PRODUCTS

- A. Acceptable Manufacturers:

Hardware Item	Manufacturer
Hinges:	Ives, Hager, McKinney, Stanley, Bommer
Locksets (Cylindrical):	Schlage, Falcon, Best, Sargent, Hager, Dorma, Yale

Deadbolts:	Schlage, Falcon, Best, Sargent, Hager, Dorma, Yale
Cylinders:	Schlage, Falcon, Best, Sargent, Hager, Dorma
Keyway Cores:	<i>Provided by Willis Klein to match Owner's existing system.</i>
Push/Pulls:	Ives, Glynn-Johnson, Hager, Rockwood, Trimco
Surface Closers:	LCN, Sargent, Hager, Falcon, Norton, Stanley, Dorma, Yale
Wall/Floor Stops:	Ives, Glynn-Johnson, Hager, Rockwood, Trimco
Overhead Stops/Holders:	Glynn-Johnson, Hager, Rockwood, Trimco, Rixson
Thresholds:	Hager, NGP, Pemko, Reese, Zero
Seals/Gaskets/Sweeps/Bottoms:	Hager, NGP, Pemko, Reese, Zero
Overhead Drip Guards:	Hager, NGP, Pemko, Reese, Zero
Flushbolts/Dustproof Strikes:	Ives, Hager, Rockwood, Trimco
Plates:	Ives, Hager, Rockwood, Trimco
Silencers:	Ives, Hager, Rockwood, Trimco
Automatic Door Bottoms:	Hager, NGP, Pemko, Reese
Position Switches:	Schlage, Securitron
Electric Strikes:	Von Duprin

B. Hinges:

1. All interior standard hinges shall be one of the following:
 - a. Ives, 5BB1WT, steel hinge and pin.
 - b. Hager, BB1168, steel hinge and pin.
2. All exterior standard hinges shall be one of the following:
 - a. Ives, 5BB1HW, brass hinge and stainless steel pin.
 - b. Hager, BB1199, brass hinge and stainless steel pin.
3. All continuous hinges shall be one of the following:
 - a. Ives, 700, stainless steel.
 - b. Hager Roton, 790-900, stainless steel.
4. All continuous hinges shall be one of the following
(where finish other than clear is desired or to match painted or anodized aluminum storefronts):
 - a. Ives, 112HD, aluminum geared.
 - b. Hager Roton, 780-112, aluminum geared.
5. Interior and exterior standard hinges shall be 5 knuckle, ball bearing, heavy weight, full mortise, wide throw template type hinges with flush barrel and non-removable pins.
6. All exterior hinges shall be of non-corrosive metals, stainless steel, brass, or aluminum as specified, and appropriate for finishes required. Painted or galvanized steel is not permitted. Hinges on all exterior entry doors and all doors receiving panic hardware shall be continuous hinge type and configuration, full height of door.
7. All interior standard hinges shall be capable of 180 degree throw.
Use wide throw hinges where necessary to clear jamb trim. Provide same material and finish as standard hinges such that all hinges match for like use and applications.
8. All continuous hinges at access control doors are to be provided with electric power transfer prep, located and sized as required to coordinate with devices, equipment, and wiring needs.

9. Except where label provisions require larger or heavier hinges or where specified otherwise:
 - a. Provide 1-1/2 pairs of hinges for each door up to 7'-6".
 - b. Provide 2 pairs of hinges for doors over 7'-6".
 - c. Use 4-1/2" hinges on doors up to 3'-4" wide.
 - d. Use 5" hinges on doors over 3'-4" wide.

C. Locksets (Cylindrical):

1. All heavy-duty Grade 1 cylindrical locksets shall be one of the following:
 - a. Schlage, ND Series, "Rhodes" lever and escutcheon.
 - b. Falcon, T Series, "Dane" lever and escutcheon.
 - c. Best, 9K Series, "15" lever and "D" escutcheon.
 - d. Sargent, 11 Line TZONE Series, "L" lever and escutcheon.
 - e. Sargent, 10 Line Series, "L" lever and escutcheon.
 - f. Hager, 3400 Series, "Withnell" lever and escutcheon.
 - g. Dorma, CL800 Series, "LR" lever and escutcheon.
 - h. Yale, 4700(LN) Series, "Augusta AU" lever and escutcheon.
 - i. Stanley, QCL 100 Series, "Sierra E" lever and escutcheon.
2. All locksets shall have 2-3/4" backset with appropriate standard strike package.
3. Privacy function shall have occupancy indicator. Basis of Specification is Schlage ND Series with OS-OCC indicator outside trim.
4. All other conditions, function and operation as selected by Owner from all manufacturer's available.

D. Deadbolts (Cylindrical, when no mortise set is present):

1. All heavy-duty Grade 1 deadbolts shall be one of the following:
 - a. Schlage, B560 Series.
 - b. Falcon, D100 Series.
 - c. Best, T Series.
 - d. Sargent, 34 Series.
 - e. Sargent, 480 Series.
 - f. Hager, 3100 Series.
 - g. Dorma, D800 Series.
 - h. Yale, 3500 Series.
2. Provide with standard backset and high security dead latching lockbolt.
3. Operation of the inside ADA compliant thumb turn shall allow the locked deadbolt to unlatch without the use of a key.
4. All other conditions, function and operation as selected by Owner from all manufacturer's available.

E. Push/Pulls:

1. All push plates shall be Ives, 8200, size: 6"x16", brass.
2. All pulls shall be Ives 8190, 90 degree offset pull.
12" center-to-center x 1" diameter x 3-1/4" projection, concealed mounting, brass.

F. Surface Closers:

1. Push side condition (with parallel arm) shall be one of the following:
 - a. LCN, 4110 Series.
 - b. Sargent 351 Series.
 - c. Hager, 5200 Series.
 - d. Falcon, SC70 Series.
 - e. Norton 7570 Series.
 - f. Stanley D4550 Series.
 - g. Dorma 8916 Series.
 - h. Yale 4400 Series.
2. Pull side condition (with non-parallel arm) shall be one of the following:
 - a. LCN, 4010 Series.
 - b. Sargent 351 Series.
 - c. Hager, 5200 Series.
 - d. Falcon, SC70 Series.
 - e. Norton 7570 Series.
 - f. Stanley D4550 Series.
 - g. Dorma 8916 Series.
 - h. Yale 4400 Series.
3. Provide reduced force ADA cylinder.
4. Door closers shall be hydraulic, full rack and pinion action with a high strength cast iron or aluminum alloy cylinder. Cylinder body shall be 1-1/2" diameter, and double heat-treated pinion.
5. All closers shall have forged steel main arms and forearms.
6. Mounting shall be on the inside face of the door, interior to the room.
Closers shall not be seen on the corridor, hallway or public side of the door.
7. All covers shall be high impact plastic.
8. All finishes shall be powder coat aluminum.
9. Provide hold open functions where specified. All hold opens to be adjustable set up to 180 degrees.
10. Provide concealed closer in lieu of surface closer where a closer is used in conjunction with overhead stops/holders.
11. In all cases, the manufacturer's recommended table of sizes is to govern the size of closers to be furnished.
12. Use through-bolts to fasten surface closers to mineral core wood and hollow metal doors.
13. Furnish special overhead closers where shown or specified.
14. Provide arms, corner brackets, mounting brackets, or drop plates as required.
15. Provide 180° door swing wherever possible.
16. Reduced force opening of less than 5 lbs. of force for interior hinged doors per ADA.
17. Closing speed of sweep period shall be adjusted so that from an open position of 70 degrees the door will take at least 3 seconds to move to a point 3 inches from the latch per ADA.

G. Wall/Floor Stops:

1. All wall stops shall be one of the following:
 - a. Ives, WS401CCV, brass.
 - b. Hager, 236W, brass.

2. All floor stops shall be one of the following:
 - a. Ives, FS436; FS438 if high stop condition is required, brass.
 - b. Hager, 241F; 243F if high stop condition is required, brass.
 3. All heavy-duty floor stops shall be one of the following:
 - a. Ives, FS18S, steel stud grouted in concrete.
 - b. Hager, 269F, steel stud grouted in concrete.
 4. Provide stops or bumpers wherever an opened door strikes any part of building construction, whether indicated or not. In general, provide wall mounted stops for all doors.
 5. Furnish floor dome type where wall type cannot be used.
 6. Furnish heavy-duty floor stops at all exterior entry and panic doors, whether indicated or not.
- H. Overhead Stops/Holders:
1. All overhead stops shall be Glynn-Johnson, 90 Series.
 2. Set units for combination of stop and hold open functions.
 3. Coordinate installation with closers for proper operation and performance.
 4. Provide concealed closer in lieu of surface closer where a closer is used in conjunction with overhead stops/holders.
- I. Thresholds:
1. Aluminum, saddle-type.
 2. Fully ADA compliant.
 3. Span entire width and depth of opening.
 4. 1/2" maximum height.
 5. 1:2 ratio bevel slope.
 6. Finish to match all other hardware specified for opening, and storefront units where applicable.
- J. Seals/Gaskets/Sweeps/Bottoms (used for Weatherstripping):
1. All bottoms for doors with recessed bottom channels shall be one of the following:
 - a. Hager, 750SN.
 2. All bottoms for doors without recessed bottom channels shall be one of the following:
 - a. Hager, 772S.
 3. All bottoms to be mil finish aluminum.
 4. Provide bottoms on all exterior doors, whether scheduled or not.
 5. Weatherstripping to be Vinyl, Neoprene, EPDM, TPE (thermoplastic elastomer), or Silicone.
 6. Full length and width of opening at each condition.
 7. All weatherstripping sets shall be determined by the door hardware supplier as appropriate to the application and able to provide a weather-tight and weather-proof seal, while allowing proper operation of the door and all other hardware.
 8. Provide weatherstripping seal sets at entire perimeter jambs and head of all exterior doors, whether scheduled or not.

K. Seals/Gaskets (used for Sound Seals):

1. All sound seals shall be one of the following:
 - a. Pemko, S88 Series.
2. Silicone, adhesive-backed, with compression bulb and stabilizer flange.
3. Full length and width of opening at each condition.
4. Provide sound seal sets at entire perimeter jambs and head.

L. Overhead Drip Guards:

1. All drip strips shall be NGP, 16 Series.
2-1/2" wide x 1-1/2" high x full width of the door frame.
Arching horizontal drip shield and vertical fastening leg.
2. All drip strips to be aluminum.
3. Provide clear anodized or bronze anodized finish as applicable to match aluminum door.
If not an aluminum door, match all other hardware. Provide clear anodized, typical.
4. Install drip strip along top edge of all exterior doors, whether scheduled or not.
Caulk sealant along top edge.

M. Flushbolts/Dustproof Strikes:

1. All flushbolts shall be one of the following:
 - a. Ives, 262.
 - b. Hager, 281D.
2. Provide at top and bottom of doors.
3. Provide dust proof strike for bottom flushbolts, provide as deep as possible.

N. Plates:

1. All kick plates shall be height=8", length=2" less than door, unless otherwise indicated, and one of the following:
 - a. Ives, 8400.
 - b. Hager, 194S.
2. All armor plates shall be height=36", length=1" less than door, unless otherwise indicated, and one of the following:
 - a. Ives, 8400.
 - b. Hager, 194S.
3. All plates to be .050" thick minimum, brass, stainless steel, or aluminum.
4. All plates to have beveled edges on all 4 sides.
5. All plates to have countersunk screws.
6. Screw-fasten solid to door.
7. Provide kick plates on the interior side of all doors in a restroom, custodial or janitorial room, mechanical or electrical room, laundry room or other such utility space, whether scheduled or not.
8. Provide armor plates on both sides of all crash or impact doors, whether scheduled or not.

O. Automatic Door Bottoms:

1. All automatic door bottoms shall be one of the following:
 - a. Hager, 730S.
 - b. NGP, 422.
 - c. Pemko, 411ARL.
 - d. Reese 521C.
2. Non-handed, reversible, full mortise, flush mounting.
3. Comprised of an aluminum case surrounding a movable drop-bar seal. The drop-bar seal is actuated by a plunger which contacts the jamb as the door closes, forcing the drop-bar seal down against the floor or threshold surface.
4. Mill aluminum finish with black sponge neoprene insert.
5. Provide appropriate type of unit applicable to each door material and thickness.

P. Silencers:

1. All door silencers in metal frames shall be one of the following:
 - a. Ives, SR64.
 - b. Hager, 307D.
2. All door silencers in wood frames shall be one of the following:
 - a. Ives, SR65.
 - b. Hager, 308D.
3. Furnish silencers for all interior single and pairs of doors, whether scheduled or not.
4. Omit silencers at doors where they may interfere with other types of seals already required, such as fire rated doors, smoke doors, sound proof doors, or light proof doors.

Q. Position Switches:

1. All position switches for wood doors in wood frames shall be one of the following:
 - a. Schlage, 679-05.
 - b. Securitron, DPS-W.
2. All position switches for hollow metal doors in hollow metal frames shall be one of the following:
 - a. Schlage, 679-05 HM.
 - b. Securitron, DPS-M.
3. All position switches for wood doors in hollow metal frames shall be one of the following:
 - a. Schlage, 679-05 WD.
4. All position switches for aluminum doors in aluminum frames shall be one of the following:
 - a. Schlage, 7764.
5. Monitor the position status of door.
6. Concealed switches, flush-mounted in top of door and head of frame, directly opposite one another.
7. Magnetic switch and a permanent magnet, normally closed.
8. Finish as selected by Architect.

R. Electric Strikes:

1. All electric strikes for cylindrical or mortise locksets shall be one of the following:
 - a. Von Duprin, 6200 Series.
2. All electric strikes for panic devices and removable mullions shall be one of the following:
 - a. Von Duprin, 6100 Series.
3. Provide Von Duprin PS902 Power Supply.
4. 24 VDC or 12 VDC voltage as selected.
5. Field convertible between Fail-Safe and Fail-Secure.
Upon loss of power, the electric strike shall fail to Fail Secure condition so that the door remains in a locked position to maintain security to the building and spaces.
6. Adjustable keeper.
7. Internal solenoid.
8. Non-handed.
9. Continuous duty operation.
10. Tamper resistant faceplate.
11. Stainless steel material. Finish on stainless steel to match all other hardware at opening.
12. Hardware supplier is responsible to coordinate the model required with the condition of installation so as to assure proper fit. Verify condition and dimensions of door frames, mullions, removable mullions, and abutting walls where strikes are to be installed.

S. Automatic Door Power Operators:

1. Specified in Section 08 71 13.01.

T. Access Control Door Controllers and Credential Readers:

1. Provided by Owner's separate vendor; coordinate installation as required.

2.06 HARDWARE SCHEDULE

Hardware Set #1 (Exterior, Single)

Continuous Hinge
Push/Offset Pull
Deadbolt w/ thumb turn
Automatic Door Operator (by 08 71 13.01)
Threshold
Weatherstripping (by 08 41 13)
Door Bottom (by 08 41 13)
Position Switch

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Hardware Set #2 (Exterior, Single, Access Control)

Continuous Hinge
Lockset (Storage function)
Surface Closer w/ Cush-n-stop arm
Electric Strike
Threshold
Weatherstripping (by 08 41 13)
Door Bottom (by 08 41 13)
Position Switch

Components provided by Owner's separate vendor:
Access Control Credential Reader
Access Control Door Controllers

Hardware Set #3 (Exterior, Single)

Hinges
Lockset (Storage function)
Surface Closer w/ Cush-n-stop arm
Electronic Strike
Threshold
Weatherstripping
Door Bottom
Position Switch
Kick Plate
Overhead Drip Guard

Hardware Set #4 (Interior, Vestibule)

Continuous Hinge
Push/Offset Pull
Deadbolt w/ thumb turn
Automatic Door Operator (by 08 71 13.01)
Position Switch

Hardware Set #5 (Interior, Vestibule)

Continuous Hinge
Lockset (Entrance function)
Surface Closer

Hardware Set #6 (Interior, Single)

Hinges
Lockset (Office function)
Kickplate
Wall Stop

Hardware Set #7 (Interior, Breakroom)

Hinges
Lockset (Office function)
Surface Closer
Kickplate
Wall Stop

Hardware Set #8 (Interior, Office)

Hinges
Lockset (Office function)
Sound Seals
Automatic Door Bottom
Wall Stop

Hardware Set #9 (Interior, Restroom)

Hinges
Lockset (Privacy w/ Occupancy indicator)
Surface Closer
Wall Stop

Hardware Set #10 (Interior, Pair, Storage)

Hinges (each leaf)
Latchset, passage function (active leaf)
Flushbolts/Dustproof Strike (inactive leaf)
Overhead stop (each leaf)

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install finishing hardware as recommended by the National Builders Hardware Association.
- B. Only use fasteners supplied by the manufacturer. Provide fasteners of suitable size, quantity, type and finish to secure hardware in position for heavy use and long life.
- C. Hardware for application on metal surfaces:
 - 1. Made to standard templates.
 - 2. Fastening harmonized with hardware as to material and finish.
 - 3. Fastenings with approved type anchors according to the manufacturer.
 - 4. In general, ends of through-bolts shall be countersunk.
- D. Mount hardware in accordance with current state and federal accessibility standards and guidelines.

- E. Install hardware per manufacturers instructions and in compliance with:
 - 1. NFPA-80.
 - 2. NFPA-101.
 - 3. NFPA-105.
 - 4. NFPA-252.
 - 5. ANSI A117.1.
- F. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- G. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- H. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- I. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers".
- J. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.02 FIELD QUALITY CONTROL

- A. Material supplier to inspect hardware after installation and before final acceptance in order to ensure that hardware has been properly installed. If there are any discrepancies the material supplier is to provide the Architect, General Contractor and Installer with a written report detailing any and all discrepancies. All discrepancies are to be corrected prior to final acceptance unless otherwise directed by the Owner.

3.03 ADJUSTING AND CLEANING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit.
- B. Immediately prior to Substantial Completion replace all construction cores.
- C. Tag all keys.
- D. Check each key and each lockset to verify proper working order.
- E. Lubricate and adjust all hardware to provide smooth operation.

- F. Clean all hardware per manufacturer's instructions after installer makes final adjustments and prior to final acceptance, remove all mortar, drywall mud, paint overspray, foreign materials, labels, markings, soil, oils, etc. Polish all locksets, plates, and other hardware.
- G. Clean adjacent surfaces soiled by hardware installation
- H. Replace, at no cost to Owner, items that cannot be cleaned to manufacturer's level of new finish quality or that cannot be adjusted to operate freely and smoothly or as intended for the application made.
- I. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to function properly with final operation of heating and ventilating equipment.

SUBMITTAL CHECKLIST

- 1. Hardware Schedule.
- 2. Owner Verification and Review Meeting.
- 3. Manufacturer's Product Information.
- 4. Samples.

END OF SECTION 08 71 00

SECTION 08 71 13.01 - AUTOMATIC DOOR OPERATOR

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnish labor, materials, equipment, special tools, supervision and services required to install low energy power operator equipment as indicated on drawings and as specified herein, including but not limited to operator, touchless activation, relays, contacts, power supplies, controllers, and all other accessories as necessary for a complete and fully operational installation.

1.2 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies.
 - 1. Underwriters Laboratory, Inc. (UL).
 - 2. Federal Regulation ANSI 117.1.
 - 3. All automatic equipment to comply with ANSI A156.19

1.3 SUBMITTALS

- A. Shop drawings showing complete elevations, details and method of anchorage to location; installation of hardware; size, shape and thickness of materials; joints and connections; and details of joining with other construction.

1.4 WARRANTY

- A. Warranty of power operators, controls and labor provided by automatic door equipment installer against defects in material and workmanship at no cost to owner, for a period of one year from date of substantial completion.

PART 2 - PRODUCTS

2.1 AUTOMATIC SWING DOOR SYSTEM

- A. Automatic door operator shall be the following approved product:
 - 1. Stanley Access Technologies; Magic-Access™ Series automatic door operator

2.2 SWINGING DOOR OPERATORS

- A. General: Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.
- B. Operators: Self-contained units powered by a minimum fractional horsepower, permanent-magnet DC motors.
 - 1. Electro-mechanical Operator: Transmit power from operator to door through reduction gear train, splined spindle, door arm, and linkage assembly. Drive train shall have positive constant engagement.
 - 2. Operation: Power opening and spring closing.
 - 3. Capacity: Rated for door panels weighing up to 125 lb (57 kg)
 - 4. Mounting: Visible
 - 5. Features:
 - a. Adjustable opening, open check, and closing speeds.
 - b. Adjustable opening force.
 - c. Adjustable hold-open time between 0 and 30 seconds.
 - d. Reverse on obstruction.
 - e. Touchless activation.
- C. Closing Operation: The operator shall close the door by spring energy employing the motor, as a dynamic brake to provide closing speed control. The closing spring shall be adjustable for positive closing action at a low material stress level for long spring life.
- D. Manual Use: The operator shall function as a manual door closer in the direction of swing with or without electrical power. The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door fully open.
- E. Electrical service to door operators shall be provided under Division 26 Electrical. Minimum service to be 120 VAC, 5 amps.

2.3 OPERATOR HOUSING:

- A. Header Case: Header case shall not exceed 6-1/8 inch x 4 inch in rectangular section and shall be fabricated from extruded aluminum with structurally integrated end caps, designed to conceal door operators and controls. The operator shall be sealed against dust, dirt, and corrosion within the header case. Access to the operator and electronic control box shall be provided by a full-length removable cover, edge rabbetted to the header to ensure a flush fit. Removable cover shall be secured to prevent unauthorized access.

2.4 ELECTRICAL CONTROLS

- A. Electrical Control System: Electrical control system shall include a solid state controller with quick connect plugs.
- B. Controller Protection: The controller shall incorporate the following features to ensure trouble free operation:
 - 1. Main Fuse Protection.
 - 2. Electronic Surge Protection.

3. Internal Power Supply Protection.
4. Motor Protection, over-current protection.

- C. Program Dip Switches: The controller shall have program dip switches to allow selection or change of activation options; standard activation or push-to-operate.
- D. Power Switch: Automatic door operators shall be equipped with a two position On/Off switch to control power to the door.

2.5 ACTIVATION DEVICES

- A. Touchless Wave Sensors: Provide 4 ½ inch square plate with UL listed switch. Face plates and mounting studs shall be stainless steel. Face plates shall be engraved with a motion hand symbol. Activation plate shall be wall mounted in single or double gang electrical boxes and hardwired to door operator controls.

2.6 ALUMINUM FINISHES

- A. Class I, Color Anodic Finish: AA-M12C22A42/A44 Mechanical Finish: as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.70 mils minimum complying with AAMA 611-98, and the following:
1. Color: Black.
 2. AAMA 606.1
 3. Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of swinging automatic entrance doors. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.
- B. Mounting: Install automatic door operators/headers plumb and true in alignment with established lines and grades. Anchor securely in place.
1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
 2. Set headers, arms and linkages level and true to location with anchorage for permanent support.
- C. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.

D. Mode of Operation:

1. During regular business hours, thumb turn deadbolt is unlocked. Door to remain in closed position when unlocked until operator is activated. Automatic door operator is activated by touchless wave sensor either inside or outside. Activation operates both interior and exterior vestibule doors in synchronized time delay sequence.
2. During times other than business hours, thumb turn deadbolt is locked. Toggle switch on automatic door operator shall be switched to the "OFF" position prevent damage to operator. Entry through door can only be accomplished by key entry.

3.3 FIELD QUALITY CONTROL

- A. Testing Services: Factory Trained Installer shall test and inspect each swinging automatic entrance door to determine compliance of installed systems with applicable ANSI standards.

3.4 ADJUSTING

- A. Adjust door operators, controls, and hardware for smooth and safe operation, for tight closure, and complying with requirements in ANSI A156.19 by AAADM Certified Technician.

3.5 CLEANING AND PROTECTION

- A. Clean surfaces promptly after installation. Remove excess sealant compounds, dirt, and other substances. Repair damaged finish to match original finish.

END OF SECTION 08 71 13.01

SECTION 08 81 00 - GLASS AND GLAZING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Glass and glazing as shown on the Drawings and specified herein.

1.02 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. Glazing Material:
 - a. ANSI Z97.1.
 - b. ASTM 1036, Standard Specifications for Flat Glass.
 - 2. Safety Glazing:
 - a. Federal Standard CPSC 16 CFR 1201.
 - b. ANSI Z97.1.
 - c. ANSI Z97.1q.
 - d. U.S. Consumer Product Safety Commission Standard 16 CFR 1201 CI and CII.
 - e. ASTM C1172, Standard Specification for Laminated Architectural Flat Glass.
 - 3. Insulating Glass:
 - a. Manufacturing: ASTM E 6 P03, Class CBA.
 - b. Installation: SIGMA A-3000.
- B. Unless otherwise shown or governed by other reference standards specified, conform with details and procedures of FGMA Glazing Manual.
- C. The level of acceptability for glass and glazing products may be more strict than the basic standards referenced herein. The Owner and/or Architect reserve the right to determine whether a product is acceptable for its intended use, in its intended application, for its intended clarity of visibility, and as required for its intended aesthetic effect.

1.03 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Materials description and installation instructions for glazing compounds.
- B. Samples:
 - 1. Submit 6" x 6" actual sample of each glass type, color, tint, etc.
 - 2. Submit 12" x 12" actual sample of insulated units or spandrel units.

C. Warranty:

1. Submit specified warranty for review.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver glazing materials to project site in manufacturer's unopened containers, fully identified with trade name, color, size, hardness, type, class and grade. Store each item in accordance with manufacturer's instructions. Remove all damaged, or otherwise unsuitable material immediately from the job site.

1.05 JOB CONDITIONS

- A. Do not perform work under adverse weather or job conditions. Install liquid sealants when temperatures are within lower or middle third of temperature range recommended by manufacturer.

1.06 WARRANTY

- A. Provide manufacturer's warranty for insulated glass units against material obstruction of vision resulting from moisture infiltration or dust collection between interior glass surfaces for ten (10) years.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Provide products, as approved by the Architect, from one of the following, or as otherwise specifically listed:
 1. "AGC Glass Company North America".
 2. "Guardian Industries".
 3. "Oldcastle Building Envelope".
 4. "Pilkington North America, Inc.".
 5. "Vitro/PPG Industries, Inc.".

2.02 GLASS TYPES

- A. Clear Float Glass:
 1. Glass sheet made by floating molten glass on a bed of molten tin.
 2. Thickness as shown on Drawings or specified herein.
 3. Safety glass in all doors, windows, transoms and sidelights, where required by code and where shown on the Drawings and specified herein, whether required by Code or not.
 4. Safety glass to be laminated or tempered at all exterior units and tempered at all interior units, unless otherwise indicated.
 5. Glass to be clear.

B. Tinted Float Glass:

1. Thickness as shown on Drawings or specified herein.
2. All requirements of clear float glass apply as specified above, except glass lites to be tinted.
3. Body tinted by adding colorants to normal batch of clear molten glass.
4. Tint color to be as indicated or as selected by Architect from manufacturer's entire selection.

C. Low-E Glass:

1. Coated to reduce transmission of radiation, infrared, and ultraviolet rays.
2. Smooth, sputter coating. Pyrolytic coatings are not permitted.
3. Thickness as shown on Drawings or specified herein.
4. All requirements of clear float glass or tinted float glass apply as specified above, except glass lites to be Low-E coated and applied to surface 2 (from outside face).
5. See Tinted Float Glass for tint color, where tinted glass is required.
6. Provide one of the following approved products, or an approved equal:
 - a. "AGC"; Energy Select 36.
 - b. "Guardian", SunGuard SuperNeutral 68.
 - c. "PPG", Solarban 60.

D. Laminated Safety Glass:

1. Thickness as shown on Drawings or specified herein.
2. (2) lites of equal thickness of heat strengthened clear or tinted float glass.
3. .030" polyvinyl interlayer.
4. Inner lite clear. Tint outer lite if tinted glass is required.
5. See Tinted Float Glass for tint color, where tinted glass is required.

E. Tempered Safety Glass:

1. Thickness as shown on Drawings or specified herein.
2. Single thickness of clear or tinted float glass.
3. Reheated to just below melting point and suddenly cooled for tempering.
4. Upon major impact, the glass surface shall shatter into small pieces free of sharp points or slivers.
5. See Tinted Float Glass for tint color, where tinted glass is required.

F. 1" Insulating Glass:

1. Manufacturer's standard units comprised of (1) 1/4" outdoor lite and (1) 1/4" indoor lite separated by 1/2" desiccant spacer bar with an overall nominal thickness of 1".
2. Complete units tested and approved in accordance with requirements of the Sealed Insulating Glass Manufacturer's Association (SIGMA).
3. Outdoor Lite:
 - a. 1/4" Low-E, tinted, laminated safety glass.
 - b. All requirements of Low-E glass apply as specified above.
 - c. See Tinted Float Glass for tint color.
4. Indoor Lite:
 - a. 1/4" clear, tempered safety glass
 - b. All requirements of laminated or tempered safety glass apply as specified above.

G. Spandrel Glass:

1. Manufacturer's standard units comprised of (1) 1/4" outdoor lite and (1) 1/4" indoor lite, separated by an air space, and comprising an overall nominal thickness of 1".
2. Complete units tested and approved in accordance with requirements of the Sealed Insulating Glass Manufacturer's Association (SIGMA).
3. Outdoor lite:
 - a. 1/4" Low-E glass, tinted, laminated or tempered safety glass.
 - b. All requirements of Low-E glass apply as specified above.
 - c. See Tinted Float Glass for tint color.
4. Indoor lite:
 - a. 1/4" solid tint primer spandrel glass.
 - b. Bright, colored, opaque, highly reflective decorative finish.
 - c. Spandrel coating to be applied to surface 4 (from outside face).
 - d. Spandrel coating to be applied to surface 3 (from outside face), only if interior face of spandrel panel is intended to be left exposed to view.
5. Separate outdoor and indoor lites by 1/2" desiccant spacer bar.
6. At least one of the outer or inner lites must be laminated safety glass.
Preferable for the exterior lite to be laminated unless coating and/or tinting prohibit it.
7. Acceptable Manufacturing Method - Opacified Coating:
 - a. Glass which has been processed to apply a silicone elastomer or opacified organic coating on the inside/back face of the spandrel panel.
 - b. Provide one of the following approved products, or an approved equal:
 - 1) "ICD Coatings", Opaci-Coat-300.
 - 2) "Guardian", DecoCristal, Back-Painted Glass.
8. Spandrel panel color to be selected by Architect from manufacturer's entire selection.
Color intended to match tinted glass selected, unless specifically indicated otherwise.

H. Etched Glass Film:

1. Provide the following approved product, or an approved equal:
 - a. "3M" Crystal Glass Finishes, Frosted Crystal White(7725SE-324)
2. Description:
 - a. Roll Size: 48" wide x 10 yard rolls.
 - b. Thickness (Film + Adhesive): 4.7 mils
 - c. Film Type: Vinyl
 - d. Adhesive Type: Pressure-sensitive
 - e. Visible Light Transmittance: 72%
3. Install to interior face of building perimeter glass at locations indicated on Drawings.

2.03 MISCELLANEOUS MATERIALS

A. Glazing Sealant for Exterior Glazing:

1. One Part Silicone, FS TT-S-00230C, Type II, Class A.
2. Provide one of the following approved products:
 - a. "General Electric Company", 1200 Series.
 - b. "Dow Corning Corporation", Dow Corning Silicone Rubber Sealant.
 - c. "Tremco", Proglaze Silicone Construction Sealant.
 - d. "Pecora Chemical Corporation", 863.
 - e. "DAP, Inc.", Dap Flexiglaze 1231 Glazing Compound.

B. Glazing Tape:

1. Polyisobutylene / butyl.
2. Provide one of the following approved products:
 - a. "Tremco", Tremco 440 Tape.
 - b. "Pecora Chemical Corporation", G-66.
 - c. "Pecora Chemical Corporation", BB-50.
 - d. "DAP, Inc.", Butyl Rubber Tape.

C. Setting Blocks:

1. Neoprene blocks, 80 to 90 Type A durometer hardness.

D. Spacers:

1. Neoprene blocks, 40 to 50 Type A durometer hardness, 3" long, self-adhesive on one face only.

2.04 FABRICATION

A. Sealed Edge Construction for Insulated Units:

1. Fabricate units with a permanent, hermetically sealed, dry air or gas filled space of the width indicated, between sheets of glass as indicated.
2. Except as otherwise indicated, fabricate units with 1/2" wide air spaces.
3. Label each unit to show compliances with required standards and regulations.
4. Indicate which face of unit is for exposure to exterior of weather.
5. Provide removable label except where regulations require a permanent label.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Examine all surfaces to receive the parts of the Work specified herein.
- B. Verify all dimensions of in-place and subsequent construction.
- C. Application or installation of materials constitutes acceptance of the related construction.

3.02 INSTALLATION

- A. Employ only experienced glaziers who have had previous experience with the materials and systems being applied. Use tools and equipment recommended by the glass manufacturer.
- B. Maintain a minimum temperature of 40°F during glazing unless the manufacturer of the glazing materials specifically agrees to application of his materials at lower temperatures.
- C. Clean glazing stops and rabbets to receive glazing materials of all obstructions and deleterious substances which might impair the work. Remove protective coatings which might fail in adhesion or interfere with bond of sealants. Comply with manufacturer's instructions for final wiping of surfaces immediately before application of primer and glazing compounds or tapes.
- D. Inspect each piece of glass immediately before installation.
Do not install pieces which are defective or damaged in any way.
- E. Set glass on setting blocks or shims. Use blocks of proper size and spacing to support the glass in accordance with manufacturer's recommendations.
- F. Provide spacers for all glass to separate glass from stops, except where continuous gaskets or tape are required.
- G. Set glass in a manner which produces greatest possible degree of uniformity in appearance.
- H. Install glass according to manufacturer's recommendations and in accordance with the Flat Glass Marketing Association Glazing Manual.
- I. Clean excess sealant or compound from glass and framing members immediately after application, using solvents or cleaners recommended by manufacturers.

3.03 CURING, PROTECTION AND CLEANING

- A. Cure sealants in accordance with the manufacturer's instructions to attain maximum durability and adhesion to glass and framing as soon as possible.
- B. Remove and replace any glass which has become broken, cracked, chipped, or damaged, in any way and from any source, including weather, vandalism, construction, handling, accidents during the construction period, etc.
- C. Maintain glass in a reasonably clean condition during construction so that it will not become stained and will not contribute to the deterioration of glazing materials.
- D. Remove labels, clean and polish glass on both faces prior to final inspection. Comply with instructions and recommendations of the glass manufacturer and glazing materials manufacturer for cleaning in each case.

3.04 TESTING OF EXTERIOR GLAZING SYSTEMS

- A. After completion of exterior glazing and nominal curing of sealants, perpendicularly from a 3/4" hose at normal domestic water pressure, test each exterior glazing unit. Repair leaks and other defects, and retest as directed. Repair or replace other work damaged by such leaks.

SUBMITTAL CHECKLIST

1. Manufacturer's Literature.
2. Samples.
3. Warranty.

END OF SECTION 08 81 00

SECTION 09 29 00.02 - GYPSUM DRYWALL - WOOD STUD CONSTRUCTION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Gypsum wallboard and gypsum drywall finish and as shown on the Drawings and specified herein.
- B. Exterior sheathing products where not specifically specified elsewhere.

1.2 QUALITY ASSURANCE

- A. Gypsum wallboard construction shall comply with all laws, ordinances, rules, regulations and orders of public authorities having jurisdiction.
- B. All material shall be from a single manufacturer.

1.3 REFERENCES

- A. Comply with applicable requirements of ANSI/ASTM C 840 for application and finishing of gypsum board, unless otherwise indicated.
- B. Gypsum board terminology standard: GA-505 by Gypsum Association.

1.4 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered to the job in their original, unopened containers or bundles, stored in a place providing protection from damage and exposure to the elements. Remove damaged or otherwise unsuitable material from the job site.

1.5 SUBMITTALS

- 1.6 Product Data: Manufacturer's literature, materials description, cutsheets and recommended installation instructions for systems use.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD

A. Gypsum Board (Non-Fire Rated Assemblies):

1. Provide one of the following approved products:
 - a. "Georgia-Pacific", Gypsum Sheathing.
 - b. "USG", Gypsum Board.
2. Manufacture to meet specifications for FS SS-L-30, ASTM C 36 and ASTM C 1396.
3. Provide in maximum lengths available to minimize end-to-end butt joints.
4. Standard type, regular gypsum core gypsum board for all areas, except as otherwise indicated. If needed for specified thickness, provide product in Type X gypsum core.
5. Thickness: 5/8 inch or 1/2", as indicated on the Drawings.
6. Width: 4 feet.
7. Length: 8 feet minimum.
8. Edges: Tapered.

B. Gypsum Board (Fire Rated Assemblies-Type X):

1. Provide one of the following approved products:
 - a. "Georgia-Pacific", Type X Gypsum Sheathing.
 - b. "USG", Type X Gypsum Board.
2. Manufacture to meet specifications for FS SS-L-30, ASTM C 36 and ASTM C 1396.
3. Provide in maximum lengths available to minimize end-to-end butt joints.
4. Type X gypsum core gypsum board.
5. Thickness: 5/8 inch.
6. Width: 4 feet.
7. Length: 8 feet minimum.
8. Edges: Tapered.

C. Gypsum Board (Tile Backer Board):

1. Provide one of the following approved products:
 - a. "Georgia-Pacific", Dens-Shield.
2. Manufacture to meet specifications for ASTM C 1178.
3. Provide in maximum lengths available to minimize end-to-end butt joints.
4. Thickness: 5/8 inch or 1/2", as indicated on the Drawings.
5. Width: 4 feet.
6. Length: 8 feet minimum.
7. Edges: Square.

D. Gypsum Board Sheathing Substrate (Non-Fire Rated Assemblies):

1. Provide one of the following approved products:
 - a. "Georgia-Pacific", "Dens-Glass Sheathing".
2. Manufacture to meet specifications for ASTM D 3273.
3. Provide in maximum lengths available to minimize end-to-end butt joints.
4. Fiber glass mats over moisture-resistant gypsum core. Paperless facings.

5. Thickness:
 - a. Framing at 16 inches o.c.: 1/2 inch, or as otherwise indicated on the Drawings.
 - b. Framing at 24 inches o.c.: 5/8 inch, or as otherwise indicated on the Drawings.
6. Width: 4 feet.
7. Length: 8 feet minimum.
8. Edges: Square.

2.2 WOOD STUDS

- A. Specified in Section 06100 – Rough Carpentry.

2.3 MATERIALS AND COMPONENTS

- A. Fasteners:
 1. Type S and S-12 screws, bugle head or pan head.
 2. Sized to provide 3/8 inch penetration beyond thickness of wallboard.
- B. Accessories:
 1. Corner reinforcements, casing beads and metal trim, fabricated from 26 gauge galvanized sheet steel with perforated flanges, designed to receive joint compound.
- C. Control Joints:
 1. "USG", "No. 093".
- D. Suspension System for Suspended Gypsum Board Ceiling:
 1. "USG/Donn", "Rigid X".
- E. Hangar Wires:
 1. ASTM A-641, 12 gauge, 0.475 lbs/ft.
- F. Reveals:
 1. "Gordon, Inc.", "Final Forms I, Series 500".
 2. Sizes and shapes as shown on Drawings, or if not shown, 1/2 inch wide reveal.
 3. Extruded aluminum.

PART 3 - EXECUTION

3.1 INSTALLATION OF WALLBOARD

A. Single Layer Wallboard - Wood Stud Partitions:

1. Secure wood runners to concrete slabs with power driven anchors, spaced 24 inches o.c. maximum. Secure to concrete or block masonry foundations with anchor bolts as per the Drawings. Secure to wood decking with screw anchors or nail attachment at every stud minimum.
2. Space wood studs 16 inches o.c. and locate studs at door and window frames, partition intersections and corners. Locate studs within 2 inches of all door-frame jambs and anchor to jamb and head anchor clips of frame by screw or nail attachment. Over frames a cut-to-length stud extending from door frame header to ceiling runner shall be positioned over vertical joints over door frame. Anchor all frames at jamb anchor clips, after stud and before gypsum wallboard is installed.
3. Sound attenuation blankets shall be pressure-fit between studs.
4. Apply single layer wallboard face out with long dimension vertical. All abutting ends and edges shall occur over stud on different studs. Screws shall be spaced 12 inches o.c. in field of board and 8 inches o.c. staggered along vertical edges.
5. Use wallboard of maximum practical lengths to minimize end joints.
6. Use single panel to span entire length of width of surface where possible.
7. Stagger end joints when they occur.
Locate end joints as far as possible from center of wall or ceiling.
8. Butt wallboards without forcing
9. Support ends and edges of wallboard panels on framing or furring members.

B. Wall Board Ceilings - Suspended:

1. Install suspension system level and true, in accordance with manufacturer's instructions, to a tolerance of 1/8 inches in 12'-0".
2. Install suspension system to comply with ASTM C636. Secure only from building structural members. Locate hangers near each end and at 4'-0" along each carrying channel.
3. Install fastener type and spacing per manufacturer or corrosion resistant buglehead drywall screws at 12 inches o.c. in field and 8 inches o.c. along edges; whichever is the most restrictive requirement.

C. Attachment:

1. Wallboard shall be attached to framing supports by Adhesive Screw-On Method. Continuous bead of adhesive applied to framing plus supplemental screw fasteners.
2. Minimum edge clearance for mechanical fasteners: 3/8".
3. Position mechanical fasteners opposite each other on adjacent ends or edges.
4. Space fasteners 12" on centers along supports in ceilings and walls.
5. Attach starting from center of wallboard and proceed toward outer ends and edges.
6. Do not fracture wallboard face paper.

D. Accessories:

1. Corner beads shall be installed on all exterior corners attached with suitable fasteners spaced 9 inches o.c. on both sides, and shall be in single lengths unless corner exceeds standard stock lengths.

2. Metal trim shall be installed over face-layer wallboard, attached with suitable fasteners spaced 9 inches o.c. and shall be in single lengths unless application length exceeds standard stock lengths.
3. Wallboard screws shall be applied with an electric driver.
4. Provide control joints at maximum 28'-0" o.c. If additional shrinkage cracks occur, install control joints and patch cracks.

E. Joint Treatment:

1. Finish all joints and interior corners with joint tape and joint compound.
 - a. Apply joint compound sufficiently thick to hide board surface at angles and joints. Cover nail/screw heads and depressions with compound.
 - b. Apply tape, squeeze out excess compound and cover tape with compound.
 - c. When first coat has thoroughly dried apply two coats of compound, extending each coat slightly beyond previous coat. Sand to smooth, flat surface, ready for specified finish.

F. Finish:

1. Level 4 finish at all exposed areas and Level 5 finish at the following conditions:
 - a. All walls indicated to receive a skim coating.
 - b. All walls scheduled to receive a highly reflective wallcovering.
2. Level 2 finish at concealed areas (above ceilings, draftstopping).
3. No textured walls or ceilings.

3.2 CLEANING

- A. Remove soil, stain caused by drywall installation.**

PART 4 - SUBMITTAL CHECKLIST

- A. Product Data.**

END OF SECTION 09 29 00.02

SECTION 09 30 00 - TILE

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 General Requirements, and Drawings are applicable to this Section.
- B. Section Includes:
 - 1. Porcelain floor tile where shown on Drawings.
 - 2. Porcelain wall tile where shown on Drawings.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control joints, thresholds, and setting details.
 - 2. Locate and detail expansion and control joints.
- B. Product Data:
 - 1. Manufacturer's product data sheets, cutsheets, specifications and instructions for using mortars, adhesives, and grouts.
- C. Samples:
 - 1. Tile: Submit color samples as specified on Drawings or manufacturer's entire color selection.
 - 2. Grout: Submit color samples as specified on Drawings or manufacturer's entire color selection.

1.3 QUALITY ASSURANCE

- A. Single Source Responsibility:
 - 1. Obtain each type and color tile material required from single source.
 - 2. Obtain setting and grouting materials from one manufacturer to ensure compatibility.
 - 3. Furnish a 10 year guarantee from installation material manufacturer. The guarantee is inclusive of installation materials, finish product, and labor.
- B. Manufacturer Qualifications:
 - 1. Tile: Minimum 5 years experience in manufacture of tile products.
 - 2. Setting Materials: Minimum 10 years experience in manufacture of setting and grout materials specified.

3. Membrane: Minimum 5 years experience in manufacture of membrane materials specified.

C. Installer Qualifications:

1. Specializing in tile work having minimum of 5 years successful documented experience with work comparable to that required for this Project.

D. Certifications:

1. Submit "Master Grade Certificate" for each type of ceramic, quarry, and paver tile in accordance with requirements of ANSI A137.1.
2. Submit manufacturer's certifications that mortars, adhesives, and grouts are suitable for intended and specified use.

E. Conform to ANSI- Recommended Standard Specifications for Ceramic Tile - A137.1

F. Conform to TCA Ceramic Tile: The Installation Handbook.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Section 01 65 00.
- B. Labeling: Comply with ANSI A137.1.
- C. Deliver materials in manufacturer's unopened containers, fully identified with name, brand, type, and grade.
- D. Protect materials from contamination, dampness, freezing, or overheating in accordance with manufacturer's instructions.
- E. Broken, cracked, chipped, stained, or damaged tile will be rejected, whether built-in or not.
- F. Protect mortar and grout materials against moisture, soiling, or staining.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Comply with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during, and after installation.
- B. Do not begin installation until building is completely enclosed and HVAC system is operating and maintaining temperature and humidity conditions consistent with "after occupancy" conditions for a minimum of 2 weeks.
- C. Maintain continuous and uniform building temperatures of not less than 50 degrees F during installation nor more than 100 degrees F.
- D. Ventilate spaces receiving tile in accordance with material manufacturers' instructions.

1.6 MAINTENANCE MATERIALS AND DATA

- A. See Specification Section 01 78 46 - Closeout Maintenance Materials.
- B. Submit maintenance data under provisions of Section 01 78 00 - Closeout Submittals.
- C. Include cleaning and maintenance methods, cleaning solutions recommended, stain removal methods, and polishes and waxes recommended.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. "Dal-Tile Corp."
- B. "American Olean".
- C. "Portobello America."

2.2 GENERAL

- A. ANSI Standards:
 - 1. Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
 - 2. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- B. ANSI Standard for Tile Installation Materials:
 - 1. Comply with ANSI standard referenced with products and materials indicated for setting and grouting.
- C. Factory Blending:
 - 1. For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.
- D. Mounting:
 - 1. Where factory-mounted tile is required, provide back-face or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.
 - 2. Where tile is indicated for installation in swimming pools, on exteriors or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies that this type of mounting is suitable for these kinds of uses and has been successfully used on other projects.

2.3 PORCELAIN TILE

A. Porcelain Floor Tile:

1. Type: As shown on Drawings.
2. Size: As shown on Drawings.
3. Pattern: As shown on Drawings.
4. Color: As shown on Drawings.

B. Porcelain Wall Tile:

1. Type: As shown on Drawings.
2. Size: As shown on Drawings.
3. Pattern: As shown on Drawings.
4. Color: As shown on Drawings.
5. Color: As shown on Drawings.

2.4 THRESHOLDS

A. Metal Edge Strip:

1. General:
 - a. Provide metal edge strip at the transition between the tile flooring to the adjacent flooring.
 - b. Equal to : "Schluter Systems" transition and edge strips.
2. Size and Profile:
 - a. Bent angle profile with smooth finished edges.
 - b. Configuration as required to provide proper transition between finished surface of tile and that of the adjacent finished flooring.
 - c. Height to match the thickness of the tile, with top surface smooth and flush with the tile.
3. Finish:
 - a. White zinc, aluminum or stainless steel.
 - b. Finish as selected from all manufacturer's standard selection.

2.5 TRIMMERS

- A. Provide necessary caps, stops, returns, trimmers and other shapes to complete installation.**

2.6 MORTAR MATERIALS - THIN SET BEDS

- A. Portland Cement With Latex Additive; Thin-Set:
1. Provide one of the following acceptable products:
 - a. "Custom Building Products", CustomCrete Latex Mortar Admix with site mixed Mortar or CreteMix.
 - b. "Laticrete, 4237 Latex Thin Set Mortar Additive.
 - c. "Mapei, Keracrete System, consisting of KER 303 Latex mixed with 1:1 sand/cement blend.
 2. Description:
 - a. Latex additive and site mixed portland cement mortar. Complying with ANSI A118.4.
 3. Quantity:
 - a. As recommended by latex additive manufacturer.
- B. Lightweight Portland Cement; Thin-Set (for use with large format 18" x 18" or larger floor tile):
1. Provide one of the following acceptable products:
 - a. "Custom Building Products", ProLite Tile & Stone Mortar or approved equal.
 2. Description:
 - a. Lightweight formula for use with large format tile and stone.
 - b. Complying with ANSI A118.4TE, A118.15TE and A118.11.

2.7 MEMBRANES, PRIMERS AND SEALERS

- A. Crack Isolation and Waterproofing Membrane:
1. Provide one of the following acceptable products:
 - a. "Mapei", Mapelastic 315.
 - b. "Custom Building Products", Red Gard.
 2. Description:
 - a. Trowel applied elastomeric compound.
 3. Accessories:
 - a. Preformed fiberglass mesh coving, inside and outside corners, and drain fittings.
 - b. Preformed expansion joint flashing.
- B. Concrete Slab Primers and Sealers:
1. Where existing substrate is unacceptable for adhesion or bonding of new materials: Provide primers and sealers as required by flooring manufacturer to achieve the proper substrate conditions for installation of flooring.
 2. Scarify, shot-blast, or sand-blast floor as required at no change in bid price.

2.8 GROUT

A. Epoxy Grout:

1. Provide one of the following acceptable products:
 - a. "Custom Building Products", CEG2000 100% Solids Epoxy Grout.
 - b. "Laticrete", Spectralock 2000 IG Chemical Resistant Industrial Grade Epoxy Grout.
 - c. "Mapei", Kerapoxy Chemical Resistant Grout.
2. Multi-component, factory prepared, 100 percent epoxy resin and hardener with sand or mineral filler material.
3. Comply with ANSI A118.3.
4. Color: As indicated or to be selected by Architect from manufacturer's entire selection.
5. Location: Provide for all floor and wall surfaces, unless indicated otherwise.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that areas to receive tile installed by thin bed method have wood float finish and pitched to drains. Substrates are to be true within 1/8 inch in 10'-0" (for all tiles 18" and larger). Substrates are to be true within 1/4 inch in 10'-0" (for all tiles smaller than 18").
- B. Condition of Surfaces to Receive Tile:
 1. Firm, dry, clean and free of oily or waxy films, mortar and soil.
 2. Grounds, anchors, plugs, hangers, bucks, electrical and mechanical work in or behind tile installed.
- C. Air Temperature and Surfaces in Rooms to Receive Flooring:
 1. Between 60 degrees to 90 degrees F, unless otherwise recommended by manufacturers of materials being installed.

3.2 PREPARATION

- A. Clean substrates.
- B. Wet down or wash dry, dusty surfaces and remove excess water immediately prior to application of tiles.
- C. Prepare surfaces in strict accordance with instructions of manufacturer whose setting materials or additives are being used.
- D. Acid Based Cleaners: Use not permitted.
- E. Scarify concrete substrates with blast track equipment if necessary to completely remove curing compounds or other substances that would interfere with proper bond of setting materials. Clean and maintain substrate in condition required by setting material manufacturer.

- F. Do not seal substrate unless required by manufacturer.
- G. Prime substrate when required by manufacturer.
- H. Blending:
 - 1. For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.
 - 2. If not factory blended, either return to manufacturer or blend tiles at project site before installing.

3.3 INSTALLATION

A. Concrete Slab Primers and Sealers:

- 1. Install primers and sealers in accordance with manufacturers recommended installation guidelines and details.
- 2. Apply all concrete slab primers and sealers as required to achieve an acceptable substrate for installation of flooring per flooring manufacturer's requirements. Apply when areas are ready or scheduled to receive flooring without delays to the project or schedule, and without any additional costs or change in time. If floor is required to be sandblasted, shot-blasted, scarified, or otherwise prepared, perform this work at no additional cost or change in time.

B. Crack Isolation and Waterproofing Membrane:

- 1. Install membrane in accordance with manufacturers recommended installation guidelines and details.
- 2. Install membrane over cracks of up to 1/8 inch or greater in substrates.
Apply a 12 inch wide strip centered on crack as crack isolation membrane.
- 3. Install membrane with products or methods approved in writing by membrane manufacturer when joining, sealing, fastening, or adhering sheet membranes.
- 4. Once all cracks have been addressed, install membrane to entire floor substrate as waterproofing membrane.
- 5. Flash waterproofing up adjacent walls and surfaces in accordance to manufacturer's details, full height of base.
- 6. Use preformed cove, corners, and expansion joint flashing.
- 7. Allow membrane to cure as prior to setting tile.
- 8. Do not allow construction traffic on membrane.
- 9. Flood test waterproof membranes after fully cured.
- 10. Field Quality Control water test when required.

C. Tile Installation, General:

- 1. Install tile materials in accordance with ANSI A137.1, other referenced ANSI and TCNA specifications, and TCNA "Handbook for Ceramic Tile Installation", except for more stringent requirements of manufacturer or these Specifications.
- 2. Cut and fit tile tight to protrusions and vertical interruptions and treat with a compatible sealants as required. Form corners and bases neatly.

3. Work tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joint watertight, without voids, cracks, excess mortar, or grout.
4. Prepare surface, fit, set, bond, grout and clean in accordance with applicable requirements of ANSI standards and Tile Council of North America.

D. Layout:

1. Lay out work to pattern indicated so that full tile or joint is centered on each wall and no tile of less than half width need be used. Do not interrupt pattern through openings. Lay out tile to minimize cutting and to avoid tile less than half size.
2. For heights stated in feet and inches, use courses of full tile to produce nearest attainable heights without cutting tile.
3. No staggered joints will be permitted.
4. Align joints in tile in both directions.
5. Align joints between floor and base tile.
6. Make joints between sheets of tile exactly same width as joints within sheet.
7. File edges of cut tile smooth and even.
8. Cut and fit tile at penetrations through tile. Do not damage visible surfaces. Carefully grind edges of tile abutting built-in items. Fit tile at outlets, piping and other penetrations so that plates, collars, or covers overlap tile.
9. Extend tile work into recesses and under or behind equipment and fixtures, to form complete covering without interruptions, except as otherwise indicated. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments.
10. Accurately form intersections and returns.

E. Thin Set Method, Floors and Walls, ANSI-108.4, 108.5, 108.14, 108.15, 108.16:

1. Apply mortar or adhesive with notched trowel using scraping motion to work material into good contact with surface to be covered. Maintain 90 percent coverage on back of tile and fully bed all corners.
2. Apply only as much mortar or adhesive as can be covered within allowable windows as recommended by mortar or adhesive manufacturer or while surface is still tacky.
3. When installing large tiles, ceramics or mosaics, trowel small quantity of mortar or adhesive onto back of each tile or sheet of tiles.
4. Set tiles in place and rub or beat with small beating block.
5. Beat or rap tile to ensure proper bond and also to level surface of tile.
6. Align tile to show uniform joints and allow to set until firm.
7. Clean excess mortar or adhesive from surface of tile with wet cheese cloth (not a sponge) while mortar is fresh.
8. Allow face mounted tile to set until firm before removing paper and before grouting.
9. Sound tile after setting. Replace hollow sounding tiles.

F. Grouting, ANSI A108.9- 108.10:

1. Allow tiles to set a minimum of 48 hours before grouting.
2. If bonding materials are rapid setting, follow manufacturer's recommendations.
3. Install in accordance with grout manufacturer's recommendations and ANSI A108.10.
4. Pack joints full and free before mortar takes initial set.
5. Clean excess grout from surface with wet cheesecloth as work progresses. Do not use hydrosponges.

6. Cure after grouting by covering with kraft or construction paper for 72 hours.
7. Install sealant in vertical wall joints at interior corners.

G. Control Joints and Other Sealant Usage, ANSI-A108.1:

1. Install control joints where tile abuts any/all retaining surfaces such as perimeter walls, curbs, columns, wall corners and directly over cold joints and control joints in structural surfaces conforming to architectural details.
2. Install control joint in floors at spacings as indicated in TCNA Installation Handbook, unless noted otherwise.
3. Rake or cut control joints through setting bed to supporting slab or structure. Keep joints free of mortar.
4. Install in full accordance with TCNA Installation Handbook.
5. Fill joints with self-leveling polyurethane sealant and backing material as required.
6. Fill joints around toilet fixtures with white silicone sanitary sealant.

H. Expansion Joints:

1. Keep expansion joints free of mortar and grout.
2. Use manufacturer's expansion joint flashing when covering expansion joints with waterproof or crack isolation membranes.
3. Provide expansion joints directly over changes in material, over control and expansion joints in substrate, at juncture of floors and walls, at other restraining surfaces such as curbs, columns, bases, and wall corners, and where recommended by TCNA EJ171 Expansion Joint requirements.
4. Install sealant in expansion joints.
5. Provide sealant material at items penetrating tile work, unless otherwise indicated.
6. Provide sealants and related materials in accordance with cited ANSI A108.1 and TCNA requirements.

3.4 ADJUSTING

- A. Sound tile after setting. Replace hollow sounding units.

3.5 CLEANING

- A. Clean excess mortar from surface with water as work progresses. Perform cleaning while mortar is fresh and before it hardens on surfaces.
- B. Sponge and wash tile diagonally across joints. Polish with clean dry cloth
- C. Remove grout haze following recommendation of mortar additive manufacturer. Do not use acids for cleaning.
- D. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.
- E. Wipe all sealer from glazed surfaces or any other surface that will not accept sealer. Clean tile surfaces to remove any residue and do not allow to dry on surface.

3.6 PROTECTION

- A. Prohibit traffic from floor finish for 72 hours after installation.
- B. Where temporary use of new floors is unavoidable, supply large, flat boards or plywood panels for walkways over kraft paper.
- C. Protect work so that it will be without any evidence of damage or use at time of acceptance.

PART 4 - SUBMITTAL CHECKLIST

- A. Shop Drawings.
- B. Samples.
- C. Manufacturer's Product Data.

END OF SECTION 09 30 00

SECTION 09 51 13 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Extent of acoustical ceilings as shown and scheduled on the Drawings.
- B. Types of acoustical ceilings specified in this Section include the following:
 - 1. Acoustical panel ceilings, exposed grid suspension.

1.02 QUALITY ASSURANCE

- A. UL Fire Hazard Classification:
 - 1. Where acoustical ceilings are indicated to comply with fire hazard classification provide acoustical materials which have been tested, rated and labeled by UL for indicated ratings.
 - 2. Classification: Maximum of 25 for flame spread.
- B. Sound and Noise Classification:
 - 1. Provide systems with NRC ratings in accordance with ASTM C423 and STC ratings in accordance with AMA1-II, as tested by an independent agency.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's product data sheets, cutsheets, specifications and installation instructions.
- B. Samples:
 - 1. Where colors are specified, submit one sample of each type of acoustical unit and suspension system member.
 - 2. Where colors are not specified, or are specified as "to be selected", submit samples showing manufacturer's full range of standard colors for each type acoustical unit and suspension system.
 - 3. Submit additional or larger samples of selected colors upon request.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site in manufacturers original, unopened packages, with labels intact. Store and handle to avoid damage and exposure to elements. Remove damaged or otherwise unsuitable material from job site.

1.05 MAINTENANCE MATERIALS AND DATA

- A. See Specification Section 01 78 46 - Closeout Maintenance Materials.
- B. Submit maintenance data under provisions of Section 01 78 00 - Closeout Submittals.

1.06 PROJECT CONDITIONS

- A. Do not install acoustical ceilings until space is enclosed and weatherproof, and until wet-work in space is completed, and until temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide ceiling panels, as approved by the Architect, by one of the following manufacturers:
 - 1. "Armstrong"
 - 2. "U.S. Gypsum" (USG)
 - 3. "Celotex"
 - 4. "National Gypsum Company" (NGC)
 - 5. "Certainteed"
- B. Provide suspension systems from same manufacturer as the ceiling panel, as approved by the Architect, or by one of the following manufacturers:
 - 1. "Armstrong"
 - 2. "U.S. Gypsum/Donn Ceilings"
 - 3. "Chicago Metallic Corporation"

2.02 CEILING SYSTEMS

- A. Provide the following acoustical ceiling systems as indicated on the Drawings:
 - 1. Panel and Suspension System Type "A" :
(Lay-in, 2'x2', Drop Edge)
 - a. Panel:
 - 1. Model: "Armstrong", Ultima #1911.
 - 2. Size: 2' x 2' x 3/4".
 - 3. Edge: Beveled Tegalur.
 - 4. NRC: 0.75.
 - 5. Light Reflect: 0.90.
 - 6. Color: White.

- b. Suspension System:
 - 1. Model: "Armstrong", Prelude XL.
"USG", Donn DX/DXL.
 - 2. Profile: 2' x 2' grid, 15/16" flange.
 - 3. Material: Hot dipped galvanized
 - 4. Color: White.
- 2. Panel and Suspension System Type "B":
(Lay-in, 2'x2', Square Edge)
 - a. Panel:
 - 1. Model: "Armstrong", Fine Fissured #1728.
 - 2. Size: 2' x 2' x 5/8".
 - 3. Edge: Square.
 - 4. NRC: 0.55.
 - 5. Light Reflect: 0.85.
 - 6. Color: White.
 - b. Suspension System:
 - 1. Model: "Armstrong", Prelude XL.
"USG", Donn DX/DXL.
 - 2. Profile: 2' x 2' grid, 15/16" flange.
 - 3. Material: Hot dipped galvanized.
 - 4. Color: White.

6.

2.03 CEILING SUSPENSION MATERIALS

- A. Comply with ASTM C 635, as applicable to type of suspension system required for type of ceiling units indicated. Coordinate with other work supported by or penetrating through ceilings, including light fixtures, and HVAC equipment.
- B. Structural Class:
 - 1. Intermediate-duty system.
- C. Attachment Devices:
 - 1. Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung.
- D. Hanger Wires:
 - 1. Galvanized carbon steel, ASTM A 641, soft temper, pre-stretched, yield-stress load of at least 3 times design load, but not less than 12 gauge (0.106 inch).
- E. Type of System:
 - 1. Either direct-hung or indirect hung suspension system, as required to meet performance requirements.

F. Carrying Channels:

1. 1-1/2 inch steel channels, hot-rolled or cold-rolled, not less than 0.475 lbs. per lineal ft.

G. Edge Moldings:

1. Manufacturer's standard channel molding for edges and penetrations of ceiling, with single flange of molding exposed.
2. 15/16 inch minimum exposed leg, finish to match grid finish.

H. Exposed Suspension System:

1. Manufacturer's standard exposed runners, cross-runners and accessories, of double web types and profiles indicated, with exposed cross runners coped to lay flush with main runners.
2. Provide uniform factory-applied finish on exposed surfaces of ceiling suspension systems, including moldings, trim and accessories.
3. Manufacturer's standard baked polyester finish, low gloss, color as selected.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Furnish layouts for inserts, clips or other supports required to be installed by other trades for support of acoustical ceilings.
- B. Establish layout of acoustical units in compliance with reflected ceiling plan. Balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders.

3.02 INSTALLATION

- A. Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and industry standards applicable to work.
- B. Install all acoustical units with grain in one plane and direction.
- C. Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers near each end and spaced 4'-0" along each carrying channel or direct-hung runner, unless otherwise indicated, leveling to tolerance of 1/8 inch in 12'-0".
- D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.
 1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.

2. Screw-attach moldings to substrate at intervals not over 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12'-0". Miter corners accurately and connect securely.
- E. Install panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.
- F. Install hold-down clips in areas indicated, and in areas where required by governing regulations or for fire resistance ratings; space as recommended by panel manufacturer, unless otherwise indicated or required.

3.03 ADJUST AND CLEAN

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage.
- B. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

SUBMITTAL CHECKLIST

1. Product Data.
2. Samples.

END OF SECTION 09 51 13

SECTION 09 65 19 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Section Includes:
 - 1. Rubber Base.
 - 2. Luxury Vinyl Tile.
 - 3. Resilient flooring accessories.
- B. Furnish labor, materials, equipment, special tools, supervision and services required for floor preparation for tile installation.
- C. Furnish labor, materials, equipment, special tools, supervision and services required to install the products and systems complete as shown on the Drawings and/or specified herein.

1.2 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Manufacturer's product data and descriptive literature.
 - 2. Manufacturer's installation instructions.
 - 3. Manufacturer's maintenance instructions.
 - 4. Material safety data sheets.
- B. Samples:
 - 1. Flooring:
 - a. 3"x3" actual tiles of colors as specified on drawings. Color charts alone are not acceptable.
 - b. If color is not specified, submit samples of manufacturer's entire selection.
 - 2. Base:
 - a. Full size sections of colors as specified on drawings. Color charts alone are not acceptable.
 - b. If color is not specified, submit samples of manufacturer's entire selection.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Receive all products and materials as packaged by the manufacturer with manufacturer's seals and labels intact. Store materials at the job site within the building and in a dry place at least 48 hours before installing flooring materials.
- B. Store in space with temperature maintained between 65 degrees F and 90 degrees F.

1.4 MAINTENANCE MATERIALS AND DATA

- A. See Specification Section 01 78 46 - Closeout Maintenance Materials.
- B. Submit maintenance data under provisions of Section 01 78 00 - Closeout Submittals.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, from one of the following approved manufacturers:
 - 1. Rubber Base:
 - a. "Tarkett".
 - b. "Roppe"
 - c. "Flexco", Wallflowers.
 - 2. Luxury Vinyl Tile:
 - a. "The Mohawk Group"
 - b. "Patcraft"
 - c. "Shaw Contract Group"
 - d. "Interface"
 - e. "Mannington Commercial"
 - 3. Resilient Accessories
 - a. "Tarkett"
 - b. "Mannington Commercial"
 - c. "Patcraft"

2.2 MATERIALS

- A. Rubber Base:
 - 1. FS SS-W-40A, Type I, TS rubber.
 - 2. Meets ASTM F-1860, Group 1.
 - 3. 1/8" thickness, 120' rolls, coved, set-on type.
 - 4. 4" high unless otherwise shown.
 - 5. Color: as shown on Drawings.
 - 6. Profile: as shown on Drawings.
- B. Luxury Vinyl Tile:
 - 1. Type: as shown on Drawings.
 - 2. Size: as shown on Drawings.
 - 3. Finish: as shown on Drawings.
 - 4. Color: as shown on Drawings.
 - 5. Wear Layer Thickness: .051"/ 20mm (nominal).

6. Overall Thickness: .197"/ 5mm (nominal).
7. Warranty: 15-year wear warranty.

C. Rubber Base Adhesive:

1. Comply with recommendations of rubber base manufacturer.

D. Rubber or Vinyl Reducer Strips:

1. 1-1/2" wide, trim to match tile thickness.
2. Finish: as selected from manufacturer's entire selection.

E. Concrete Slab Primers and Sealers:

1. Where existing substrate is unacceptable for adhesion or bonding of new materials: Provide primers and sealers as required by flooring manufacturer to achieve the proper substrate conditions for installation of flooring.
2. Scarify, shot-blast, or sand-blast floor as required at no change in bid price.

F. Leveling Compound:

1. Latex type as recommended by flooring manufacturer.

G. Subfloor Leveler System:

1. Equal to: "Tarkett", Subfloor Leveler System.
2. Resilient PVC gradual sloping ramped wedged materials.
3. Provide slope, profile, and lengths as required for specific condition.

PART 3 - EXECUTION

3.1 .PREPARATION

- A. Spaces shall be at a minimum temperature of 70 degrees F. Temperature shall be maintained during and 48 hours after installation.
- B. Surfaces shall meet the minimum requirements of the manufacturer of the flooring. Do not install directly over plywood. Provide luan underlayment over all plywood decks. Commencement of installation of materials constitutes acceptance of the substrates.
- C. Work shall not be started until all items penetrating the flooring have been installed.
- D. No flooring shall be installed until the installer has ascertained that the chemical treatment of substrates will not interfere with the successful application of the flooring materials.
- E. Spaces in which resilient flooring is being installed shall be closed to traffic or other work.

- F. When solvent-based adhesives are used, the space shall be ventilated; use spark proof fans if natural ventilation is inadequate. Prohibit all smoking.
- G. Before installing flooring, test concrete floor for excessive moisture by taping an 18" x 18" mat of rubber or vinyl sheet material to floor at edges with masking tape. If condensation is apparent on the underside of the sheet after 24 hours, do not install flooring.
- H. Before installing flooring, fill all cracks and holes and level depressions with underlayment compound. Surfaces shall not vary more than 1/8" in 10' in any dimension.
- I. Before installing flooring, test concrete floor for acceptable adhesion and bonding of new materials atop substrate. If proper adhesion and bonding are not apparent, do not install flooring until sealer and primer are applied. Scarify, shot-blast, or sandblast floor if required to install sealer/primer.
- J. Install floor tiles wall to wall, under all moveable casework and cabinets, under all open counter areas, and up to fixed equipment and casework.

3.2 INSTALLATION

- A. Install flooring and products in accordance with the manufacturer's recommendations.
- B. Apply all concrete slab primers and sealers as required to achieve an acceptable substrate for installation of flooring per flooring manufacturer's requirements. Apply when areas are ready or scheduled to receive flooring without delays to the project or schedule, and without any additional costs or change in time. If floor is required to be sandblasted, shot-blasted, scarified, or otherwise prepared, perform this work at no additional cost or change in time. This includes, but is not limited to, floor slabs which are not acceptable due to excessive moisture content.
- C. Install subfloor leveler at all doors and openings as required so as to maintain a smooth, flat, and true transition between these flooring materials and adjacent flooring materials.
- D. Mix and apply adhesive as recommended by the manufacturer. Lay flooring so that fields or patterns center on areas. Adjust pattern so that edge pieces shall not be less than 1/2 size. Lay flooring true to line, level, and with tight joints. Cut flooring to and around all permanent cabinets and bases. Roll flooring to assure contact and proper adhesion to substrate.
- E. Apply wall base to walls, columns, pilasters, casework, and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable with continuous wrapping outside corners, and miter cut inside corners. Do not use preformed corner pieces.
- F. Remove excessive adhesive in accordance with flooring manufacturer's instructions.
- G. Install edge strips at termination of flooring where substrate is exposed and extends beyond.
- H. Install edge strips at doors, openings, and any and all other junctions of this flooring and adjacent flooring materials. Firmly anchor strips to subfloor with adhesive. Make transition in floor finish at centerline of door bottom or opening through wall.

- I. After installation, maintain a minimum space temperature of 55 degrees F.

3.3 LUXURY VINYL TILE POST-INSTALLATION/ INITIAL CLEANING

- A. Wait 48 hours after flooring installation before performing initial cleaning.
- B. Sweep, dust mop or vacuum the floor thoroughly to remove all loose dust, dirt, grit and debris.
- C. Remove any dried adhesive residue with a clean cloth dampened with mineral spirits.
- D. Wash thoroughly, with a cleaning solution using a pH neutral cleaner in accordance with flooring manufacturer's recommendations. The dilution ratio depends on light to heavy soil conditions.
- E. Let cleaning solution dwell for 5 to 15 minutes.
- F. Scrub the flooring using floor scrubber equipped with manufacturers recommended pad.
- G. Remove the cleaning solution using a wet vacuum.
- H. Rinse the floor thoroughly with fresh, clean water.
- I. Remove the rinse water and allow the floor to dry completely before allowing foot traffic.
- J. Repeat the rinse process if necessary to move any visible haze.

PART 4 - SUBMITTAL CHECKLIST

- A. Manufacturer's Literature.
- B. Samples.

END OF SECTION 09 65 19

SECTION 09 68 00 - CARPETING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required for floor preparation for carpet installation.
- B. Furnish labor, materials, equipment, special tools, supervision and services required to manufacture, deliver and install all carpet indicated, noted and detailed on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer who can demonstrate successful experience with installations on projects of similar size and scope to this project.
- B. Requirements and Regulatory Agencies:
 - 1. Provide carpet and padding which meets the following requirements.
 - a. Flame Spread: ASTM E84, 75 or less.
 - b. Radiant Panel Test: ASTM E648, .45 watts/CM2, or more.
 - c. Smoke Density Test: ASTM E662, 450 or less.
 - d. Pill Test: DOC FF-1-70, pass.
 - e. Meet local Fire Marshal's requirements.

1.3 SUBMITTALS

- A. Samples:
 - 1. Where colors are specified, submit one full size sample of each color specified.
 - 2. Where colors are not specified or are specified as "to be selected", submit samples showing manufacturer's full range of standard colors for each type of carpet. Submit additional or larger samples of selected colors upon request.
- B. Shop Drawings and Manufacturer's Literature:
 - 1. Seaming diagram indicating:
 - a. Pattern direction.
 - b. Location of edge strips.
 - c. Dimensions of carpeted areas.

C. Independent Testing Laboratory Test Reports:

1. Fire hazard classifications.
2. Static control.
3. Construction.

D. Certificates:

1. Manufacturer's certification that rolls furnished were manufactured in accordance with specification requirements, stating yarn and weight, backing and weight and average tuft bind.
2. Installer's list of comparable installations

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver:

1. Deliver carpet in original mill wrappings with register number tabs attached or stenciled on bale.
2. Do not deliver materials until installation is ready to begin.

B. Storage:

1. Store materials in dry, well ventilated space.
2. Do not store carpet rolls on end.

C. Handling:

1. Handle to protect from dirt and stains.

1.5 GUARANTEE / WARRANTY

A. Warrant the following items for the lifetime of the carpet face:

1. Wear: Not abrasively wear more than 10% face yarn weight under normal use.
2. Static Electricity: Maintain specified levels of static electricity generation.
3. Edge ravel: Will not occur under normal use.
4. Delamination: Will not occur under normal use.
5. Tuft Bind: Average face year tuft bind of 20 lbs.; will not zipper, wet or dry.

B. Adjustment:

1. During project guarantee period and within 15 days written notice from Owner or Architect, repair seams, edges and any other irregularity.

1.6 MAINTENANCE MATERIALS AND DATA

A. See Specification Section 01 78 46 - Closeout Maintenance Materials.

- B. Submit maintenance data under provisions of Section 01 78 00 - Closeout Submittals.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, from one of the following approved manufacturers:

- 1. "J&J Flooring."

2.2 CARPET

- A. Type:

- 1. Modular Carpet Tile products as indicated on the Drawings.
 - 2. Colors and patterns as indicated on the Drawings. If not indicated, colors and patterns are to be selected by Architect from manufacturer's entire selection for the specific carpet family specified.

- B. Static Electricity Generation (all carpet):

- 1. Control Fiber: Stainless steel, aluminum, copper, or other metal, blended with carpet fiber, or by specific fiber blend.
 - 2. Maximum 3,000 volts at 20% relative humidity and 70°F temperature, AATCC-134-75.

- C. Minimum Width: 12 feet.

2.3 INSTALLATION MATERIALS

- A. Adhesive:

- 1. Carpet Adhesive:
 - a. Per carpet manufacturer for substrate and warranty requirements.
 - b. Nonflammable.
 - 2. Seam Adhesive:
 - a. Latex base per carpet manufacturer.

- B. Concrete Slab Primers and Sealers:

- 1. Where existing substrate is unacceptable for adhesion or bonding of new materials: Provide primers and sealers as required by flooring manufacturer to achieve the proper substrate conditions for installation of flooring.

- C. Subfloor Leveler System:

1. Equal to: "Johnsonite", Subfloor Leveler System.
 2. Resilient PVC gradual sloping ramped wedged materials.
 3. Provide slope, profile, and lengths as required for specific condition.
- D. Seaming Tape:
1. "Orcon", Super-35.
- E. Edge Strips (direct glue-down installation):
1. Extruded, anodized aluminum bar reducer at exposed edges.
 2. Undercut, flanged.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examination: Examine surfaces scheduled to receive carpeting for:
1. Defects that will adversely affect the execution and quality of work.
 2. Deviation beyond allowable tolerances for carpet installation over concrete as indicated in Section 03 30 00.
- B. Conditions of Surfaces:
1. Do not install carpet over concrete substrate until concrete has cured minimum of 30 days.
 2. Check floor moisture content. Seal inverted glass tumbler to floor with putty. If condensation forms in 48 hours, do not install carpet.
 3. Do not start until unsatisfactory conditions are corrected.
 4. Install carpeting prior to installation of movable partitions and electrical floor outlets.
- C. Carpet: Unroll carpet face up and allow to lay flat at least 24 hours before installation.
- D. Prime floor slab as recommended by manufacturer.
- E. Apply all concrete slab primers and sealers as required to achieve an acceptable substrate for installation of flooring per flooring manufacturer's requirements. Apply when areas are ready or scheduled to receive flooring without delays to the project or schedule, and without any additional costs or change in time. If floor is required to be sandblasted, shot-blasted, scarified, or otherwise prepared, perform this work at no additional cost or change in time. This includes, but is not limited to, floor slabs which are not acceptable due to excessive moisture content.

3.2 INSTALLATION OF DIRECT GLUE DOWN CARPET

- A. Install carpet in accordance with approved installation direction and manufacturer's instructions.
- B. Lay carpet with minimum number of seams using minimum carpet sections in each room or space.

- C. Fit carpet neatly into breaks and recesses, against bases, around pipes and penetrations, under saddles and thresholds, and around permanent cabinets and equipment.
- D. Application of Adhesive:
 - 1. Mix and apply adhesives in accord with manufacturer's instructions.
 - 2. Do not soil walls, bases, or adjacent areas with adhesive.
 - 3. Promptly remove any spillage.
 - 4. Apply contact or seam adhesive 6 inches wide along carpet edges abutting walls and at cross-seams.
- E. Roll carpet to remove air bubbles and insure bond.
- F. Install carpeting wall to wall, under all moveable casework and cabinets, under all open counter areas, and up to fixed equipment and casework.

3.3 ADJUST AND CLEAN

- A. Cleaning:
 - 1. Remove spots and smears of cement from carpet immediately with solvent or adhesive remover.
 - 2. Remove rubbish, wrapping paper, salvages and scraps less than 2 square feet or less than 8 inches in any dimensions.
 - 3. Upon completion, vacuum with a commercial beater bar type vacuum cleaner.
- B. Protection:
 - 1. After each area of carpet has been installed, protect from soiling and damage.
 - 2. The use of tape to hold down floor protection is prohibited.
 - 3. The use of adhesive film floor protection is prohibited.

PART 4 - SUBMITTAL CHECKLIST

- A. Samples.
- B. Seaming Diagram.
- C. Testing Laboratory Reports.
- D. Certificate of Manufacturer's Compliance.

END OF SECTION 09 68 00

SECTION 09 72 00.01 - WALLCOVERINGS

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Extent of wallcoverings required is indicated on drawings and in schedules.
- B. Types of wallcovering to be furnished include the following:
 - 1. Vinyl Wallcovering Type II.
- C. See Drawings for types of wallcoverings selected.

1.2 QUALITY ASSURANCE

- A. Installer: A firm specializing in wallcovering work with not less than three years of experience in installing wallcovering similar to those required for this project.
- B. Deliver materials to project site in original packages or containers clearly labeled to identify manufacturer, brand name, quality or grade and fire hazard classification.
- C. Store materials in original undamaged packages or containers. Do not store rolled goods in upright position. Maintain temperature in storage area above 40°F.
- D. Illuminate areas of installation using building=s permanent lighting system; temporary lighting alone will not be acceptable.

1.3 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's product data sheets, cutsheets, specifications and installation instructions.
- B. Samples:
 - 1. Submit actual samples of wallcovering selected. If not selected, submit samples for selection by the Architect from manufacturer's entire selection of type indicated.
- C. Certificate:
 - 1. Manufacturers shall submit to Architect upon request, a certificate of compliance that wallcovering used meets specification and modifications outlined herein.

1.4 MOCK-UP PANEL

- A. Prepare finished substrate of an actual area scheduled to receive wallcovering.
- B. Install selected color(s), pattern(s) of each type.
- C. Minimum area 8' x 8' with 2 seam conditions.
- D. All color(s), pattern(s) must be approved prior to final ordering of material.
- E. Remove samples so all material installed is from same production run.

1.5 MAINTENANCE MATERIALS AND DATA

- A. See Specification Section 01781 - Closeout Maintenance Materials.
- B. Submit maintenance data under provisions of Section 01780 - Closeout Submittals.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Vinyl Wallcovering Type II, 20 oz scrim, minimum:
 - 1. Shall meet federal specification CCC-W-408A.
 - 2. Medium Duty, Class A vinyl coated fabric wallcovering for institutional or commercial use must conform in all respects to CFFA Quality Standard for Vinyl Coated Fabric Wallcovering CFFA-W101-A.
 - 3. When tested in accordance with ASTM E-84 Surface Burning Characteristics of Building Materials, Type II wallcovering must meet the requirements of Class A of NFPA-101, Life Safety Code, with Flame Ratings in the Range of 0-25.
 - 4. This material must meet classifications in accordance with ASTM E-84 tunnel test.
- B. Adhesives and Primers:
 - 1. As recommended by manufacturer of wallcovering for specific substrate.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Acclimatize wallcovering materials by removing from packaging in area of installation not less than 24 hours before application.

- B. Remove switchplates, wall plates, and surface-mounted fixtures in areas where wallcovering is to be applied.
- C. Prime and seal substrates in accordance with wallcovering manufacturer=s recommendations for type of substrate. Apply surface sealer to gypsum drywall which will permit subsequent removal of wallcovering without damage to paper facing.

3.2 INSTALLATION

- A. Install according to manufacturer=s instructions and recommendations.
- B. Place wallcovering panels consecutively in order cut from consecutively numbered rolls, including filling of space above or below openings. Hang by reversing alternate strips except on match patterns. Match color variations as closely as possible.
- C. Apply adhesive to back of wallcovering and place in accordance with manufacturer's instructions. Install seams plumb, and at least 6" away from corners. Horizontal seams are not permitted. Overlap seams and double-cut with straight edge to assure tight closure. Remove air bubbles, wrinkles, blisters and other defects. Cut wallcovering evenly to edges of outlet boxes or support.
- D. Trim salvages as required to assure color uniformity and pattern match.
- E. Remove excess adhesive along finished seams.

3.3 ADJUST AND CLEAN

- A. Replace removed plates and fixtures; verify cut edges of wallcoverings are completely concealed.
- B. Remove surplus materials, rubbish, and debris resulting from wallcovering installation upon completion of work, and leave areas of installation in neat, clean condition.
- C. Clean wallcovering of all stains, marks and adhesives.

PART 4 - SUBMITTAL CHECK LIST

- A. Product Data.
- B. Samples.
- C. Certificate.

END OF SECTION 09 72 00

SECTION 09 90 00 - PAINTING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Extent of painting work as indicated on the Drawings and specified herein including, but not limited to:

1. Surface Inspection and Preparation.
2. Paint System Schedule - Exterior Paint Systems.
3. Paint System Schedule - Interior Paint Systems.

B. Additional requirements of the work are to include:

1. Painting and finishing of all interior and exterior items and surfaces throughout the project, except as otherwise indicated. Surface preparation, priming and costs of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.
2. Field painting of exposed steel and ironwork, and primed metal surfaces of equipment installed under mechanical and electrical, except as otherwise indicated.
3. Field painting of all exposed interior and exterior structural steel components, whether indicated or not on the Drawings. Includes painting of galvanized components unless noted otherwise.
4. Painting of exposed mechanical, electrical equipment items as indicated on the Drawings.
5. Paint exposed surfaces except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas.
6. "Paint" as used herein generally refers to all coating systems material, including primers, emulsions, enamels, stains, sealers, fillers, and other applied materials whether used as prime, intermediate or finish coat.
7. Painting and finishing of all EXISTING interior and exterior items and surfaces throughout the project, whether they are or are not currently finished, except as otherwise indicated.

1.2 RELATED WORK

A. Following categories of work are NOT included as part of field-applied finish work specified herein, or are included in other sections of the specifications:

1. Shop Priming:
 - a. Unless otherwise specified, shop priming of ferrous metal items is included under various sections for structural steel, miscellaneous metal, and shop-fabricated or factory-built mechanical and electrical equipment or accessories.
2. Pre-Finished Items:
 - a. Unless otherwise indicated, do not include painting when factory-finishing or installer finishing is specified for such items including, but not limited to, pre-finished aluminum panels, finished mechanical and electrical equipment, light fixtures, switchgear, distribution cabinets, etc.
3. Concealed Surfaces:

- a. Unless otherwise indicated, painting is not required on surfaces in concealed areas and generally inaccessible areas, such as interstitial spaces; however, doors and door frames in these spaces shall be painted.
4. Finished Metal Surfaces:
 - a. Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
- B. Following areas are to be included as special considerations of areas to NOT receive paint:
 1. Operating parts and labels, moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, unless otherwise indicated.
 2. Any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.

1.3 SUBMITTALS

- A. Product Data:
 1. Manufacturer's published product data sheets, specifications, materials description and technical information.
 2. Manufacturer's published installation and application instructions.
 3. Materials Safety and Data Sheets (MSDS).
- B. Samples and Draw Downs:
 1. If colors and finishes are indicated, submit samples boards (draw downs) for each as selected.
 2. If colors are not indicated, they will be selected by the Architect from manufacturer's entire selection. Submit complete range of available paint colors, either in the form of a fan set or individual color chips box set.
 3. If finishes are not indicated, they will be selected by the Architect from manufacturer's entire selection.
 4. Once colors and finishes have been chosen, submit samples boards for each color selected.
 5. Sample boards to be 8-1/2 inch x 11 inch cardstock, painted with actual product of color and finish as selected by the Architect. Submit three (3) of each color as selected.
Stain samples to be 6 inch x 6 inch minimum on wood species and cut as specified. Submit three (3) of each color as selected.
- C. Mock-Ups:
 1. Paint on site, a test sample area of wall, 2 foot x 2 foot minimum in size. Complete test area for each color selected, for each paint system specified, and per each substrate material included, as directed by the Architect.
 2. Paint one (1) hollow metal door and frame complete, as directed by Architect.
 3. Stain one (1) wood door complete, as directed by Architect.
 4. Mock-ups shall indicate color, texture and finish.
 5. Do not proceed with paint work until mock-ups have been approved by the Architect.
 6. If deemed unacceptable by the Architect, create another mock-up to correct items of unacceptability. Continue process until an approved mock-up has been achieved.

7. Once an approved mock-up has been achieved, use as a standard of comparison for all work.
8. Do not destroy or remove mock-up until all paint work is complete and accepted.
9. Accepted mock-ups may remain as part of the work or discarded, at the discretion of the Architect.

D. Compatibility Tests:

1. Paint on site, (2) 2 foot x 2 foot minimum test sample areas of each existing and/or previously painted surface to receive new painted finish atop. Complete test area for each color selected, for each paint system specified, per each existing color of existing surface, and per each substrate material included, as directed by the Architect.
2. Check for compatibility by applying the test sample of the recommended coating system as stated. Allow to dry for one week prior to testing adhesion per procedures of ASTM D3359.
3. Test sample areas are to be completed by the installing contractor, reviewed and checked on site by the paint manufacturer's representative. If non-compatibility issues exist, the paint manufacturer shall provide recommendations and solutions to compatibility and/or alterations to the paint system specified.
4. Submit all test results and manufacturer's approval in writing to the Architect. Painting manufacturer must certify that they approve the test results and will include the longevity and performance of the paint system in their warranty and guarantees of the paint system.

E. Additional Submittals for Concrete Tilt Walls/Precast Panels (see Paint System Schedule - Concrete Tilt Walls/Precast Panels Systems):

1. Sample boards.
2. Certification of compatibility with joint sealants.
3. Exterior paint system warranty.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job site in original, new, sealed and unopened packages and containers bearing manufacturer's name and product label.
- B. Store and protect products in strict accordance with manufacturer's recommendations and requirements.
- C. Provide physical properties of each product to be used on the project, including:
 1. Weight per gallon.
 2. Solids by weight.
 3. Solids by volume.
 4. V.O.C. as supplied.
- D. Container labeling to include:
 1. Date of manufacture.
 2. Manufacturer's name.
 3. Product name, type and stock number.
 4. Color and finish.
 5. Rate of coverage.
 6. Application instructions for surface preparation, drying time, cleanup, mixing and reducing.

- E. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in well ventilated area, unless required otherwise by manufacturer's instructions.
- F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 50 degrees F for twenty-four (24) hours before, during and forty-eight (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 Paint: 50 degrees F for exterior, unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperatures for Varnish Finishes: 65 degrees F for interior and exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 foot candles measured mid-height at substrate surface.

1.6 PROJECT CONDITIONS

- A. Apply water-base paints only when temperature of surfaces to be painted and surrounding ambient air temperatures are between 60 degrees F and 85 degrees F, for at least 72 hours prior to beginning of installation, unless otherwise permitted by paint manufacturer's printed instructions.
- B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding ambient air temperatures are between 45 degrees F and 95 degrees F, for at least 72 hours prior to beginning of installation, unless otherwise permitted by paint manufacturer's printed instructions.
- C. Maintain proper ambient air temperatures throughout entire timeframe of installation and cure period.
- D. Do not install until space is enclosed, weathertight, and ambient conditions are controlled and stabilized.
- E. Do not apply in snow, rain, fog or mist; or when relative humidity exceeds 85%; or on damp or wet surfaces.
- F. Provide adequate ventilation at all times for proper drying.

1.7 MAINTENANCE MATERIALS AND DATA

- A. See Specification Section 01 78 46 - Closeout Maintenance Materials.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, from one of the following approved manufacturers:

"The Sherwin-Williams Company" (S-W).

2.2 MATERIALS

- A. Quality:

1. Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers.
2. Materials not displaying manufacturer's identification as a standard, "top-of-the-line" product will not be acceptable.

- B. Compatibility:

1. Provide finish coats which are compatible with prime paints used.
2. Review other sections of these specifications in which prime paints or factory coats are to be provided to insure compatibility of total coatings systems for various substrates.
3. Upon request from other trades, furnish information on characteristics of finish materials proposed for use, to insure compatible prime coats are used.
4. Provide barrier coats over incompatible primers or remove and re-prime as required.
5. Provide undercoat paint produced by same manufacturer as finish coats. Where undercoats specified are not considered by the paint manufacturer to be fully compatible with the finish coat, submit recommended undercoat substitution to Architect for acceptance. No additional cost to the Owner will be considered for such a change.
6. Use only thinners approved by the paint manufacturer, and use only within recommended limits.
7. Notify the Architect in writing of any anticipated problems during bidding with the use of specified coating systems with substrates primed by others.

- C. Coatings and Pigments:

1. To be pure, non-fading, applicable types to suit substrates and service expectations indicated.
2. Ready mixed, except field catalyzed coating.
3. Pigments processed to a soft paste consistency, capable of being readily and uniformly dispersed to as a homogeneous coating.
4. Good flow and brushing properties; capable of drying or curing free of streaks or sags.

- D. Accessory Materials:

1. All materials, such as linseed oil, shellac, turpentine, paint thinners, and other materials not specifically indicated but required to achieve the finishes specified.
2. All of commercial quality.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine surfaces scheduled to be finished prior to commencement of work.
 - 1. Report any conditions that may potentially affect proper application.
 - 2. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product manufacturer.
 - 3. Do not proceed with work until unsatisfactory conditions have been corrected.
- B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film or proper adhesion required.
- C. Beginning of installation equates to acceptance of the substrate by the contractor.

3.2 PREPARATION - GENERAL

- A. Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.
 - 1. Clean surfaces to be painted before applying paint or surface treatments.
 - 2. Remove oil and grease prior to mechanical cleaning.
 - 3. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly painted surfaces.
- B. Provide all scaffolding and staging required for work in this Section.
 - 1. Coordinate locations to eliminate interference with work of others.
- C. Remove hardware, hardware accessories, machined surfaces, electrical plates, lighting fixtures, trim, clocks, speakers, devices, fittings and similar items which are not to be finish-painted, prior to preparing surfaces or finishing.
- D. Provide surface-applied protection prior to surface preparation and painting operations for all adjacent areas, surfaces, or items to remain.
- E. Correct minor defects and clean surfaces which affect work of this Section.
- F. Shellac and seal marks which may bleed through surface finishes.

3.3 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

3.4 SURFACE PREPARATION

A. Uncoated Steel and Iron Surfaces:

1. Clean ferrous surfaces, which are not galvanized or shop coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
2. Where heaving coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent.
3. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned.

B. Shop Primed Steel Surfaces:

1. Sand and scrape to remove loose primer and rust.
2. Feather edges to make touch-up patches inconspicuous.
3. Clean surfaces with solvent.
4. Prime bare steel surfaces.
5. Touch-up shop-applied prime coats wherever damaged or bare, and where required by other sections of these specifications. Clean and touch-up with same type shop primer.

C. Galvanized Surfaces:

1. surface contamination and oils and wash with non-petroleum based solvent.
2. Apply coat of etching primer.

D. Unit Masonry Surfaces:

1. Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter.
2. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to dry.
3. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water.
4. Allow to dry.

E. Gypsum Board Surfaces:

1. Latex fill minor defects.

F. Plaster Surfaces:

1. Fill hairline cracks, small holes, and imperfections with latex patching plaster.
2. Make smooth and flush with adjacent surfaces.
3. Wash and neutralize high alkali surfaces.

G. Interior Wood Scheduled to Receive Transparent Finish:

1. Remove loose dust, dirt, grit and foreign matter.
2. Set nails and screws.
3. Fill nail and screw holes, cracks and blemishes after staining with filler to match color wood or stain.
4. Sand smooth.

H. Wood Doors, Metal Doors and Metal Frames:

1. Apply one coat of paint to glazing stops and rabbets prior to glazing.

I. Insulated Coverings:

1. Remove dirt, grease and oil from canvas and cotton.

J. New Wood:

1. Prime, stain or seal wood required to be job-painted, immediately upon delivery to job.
2. Prime edges, ends, faces, undersides, and backsides of such wood.

K. Existing Wood:

1. Lightly sand and clean to remove dirt, grease, oils, etc.
2. Patch and repair any surface damage prior to re-finishing.

L. Previously Coated Surfaces:

1. Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mold, mildew, mortar, efflorescence and sealers must be removed to assure sound bonding to the tightly adhering old paint.
2. Feather edges of existing coating to make touch-up patches inconspicuous.
3. Glossy surfaces of old paint films must be clean and dull before repainting. Accomplish by sanding or thoroughly washing with an abrasive cleanser.
4. Spot prime any bare areas with an appropriate primer.
5. Provide compatibility tests per submittal requirements herein.
6. If the coating proves incompatible, complete removal is required.

M. Hand Tool Cleaning:

1. Hand tool cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust and paint be removed by this process.
2. Mill scale, rust and paint are considered adherent if they cannot be removed by lifting with a dull putty knife.
3. Prior to hand tool cleaning, remove visible oil, grease, soluble residues and salts by the methods outlined in the "Steel Structures Paint Council Surface Preparation Specification No. 2 (SSPC-SP1 and SSPC-SP2).

3.5 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.

3.6 APPLICATION

A. General:

1. Apply paint and coatings in strict accordance with manufacturer's published directions.
2. Apply all coatings at manufacturer's recommended spreading rates per coat to provide finished wet mil and dry mil coverage per coat between the minimum and maximum microns indicated.
3. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces. Paint surfaces behind movable equipment same as similar exposed surfaces.
4. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.
5. Sand lightly between each succeeding enamel or varnish coat.
6. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.

B. Scheduling Painting:

1. Apply first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
2. Allow sufficient time between successive coatings to permit proper drying.
3. Do not apply finishes to surfaces that are not dry.

C. Technique:

1. Apply each coat to uniform finish.
2. Apply each coat of paint slightly darker than preceding coat, unless otherwise approved.
3. Sand lightly between coats to achieve required finish.
4. Allow applied coat to dry before next coat is applied.

D. Apply paint as recommended by the manufacturer and as approved by the Architect:

1. Apply final coat to concrete, masonry and smooth finished wall and ceiling surfaces with roller.
2. Apply paint to exposed ceiling surfaces and in inaccessible areas by spraying.
3. Do not use spray application on other areas without written approval of Architect.
4. Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or if not indicated, as recommended by coating manufacturer.

E. Draw lines of demarcation between different shades or colors to eliminate blurred edges.

F. Back-prime all surfaces of interior and exterior wood blocking and woodwork, except pressure treated wood, with one coat of aluminum paint.

G. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

- H. Where clear finishes are required, tint fillers to match wood.
 - 1. Work fillers into the grain before set.
 - 2. Wipe excess from surface.
- I. Coat steel items that come in contact with aluminum items with a field coat of bituminous paint.
- J. Mechanical and Electrical Work:
 - 1. Painting of mechanical and electrical work is limited to those items exposed in finished occupied spaces.
 - 2. Mechanical items to be painted include, but are not limited to, ducts, diffusers, piping, pipe hangers, supports and accessory items.
 - 3. Electrical items to be painted include, but are not limited to, the following:
 - a. Conduit and fittings (In finished areas only, unless otherwise indicated).
 - b. Switchgear (In Finished areas only, unless otherwise indicated).
- K. Paint all exposed ceiling construction, including joists, structural members, metal deck and all exposed conduit, pipes, pipe covering and ductwork in these ceiling areas.
- L. Seal, stain and varnish concealed and semi-concealed surfaces of millwork items.
 - 1. Seal internal surfaces of millwork items with two coats of shellac.
 - 2. Brush apply only.
- M. Prime Coats:
 - 1. Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.
 - 2. Re-coat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
- N. Pigmented (Opaque) Finishes:
 - 1. Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage.
 - 2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.
- O. Completed Work:
 - 1. Match approved samples for color, texture and coverage.
 - 2. Remove, refinish or repaint work not in compliance with specified requirements.
- P. Renovation and Patching Areas:
 - 1. Prepare and prime new construction portions of surfaces per specifications
 - 2. Prepare existing surfaces located in the same plane as renovation or patching per specifications.
 - 3. Paint area of renovation and patching entire surface full height, from "floor-to-ceiling" and from "corner-to-corner".

3.7 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint shop primed equipment.
- B. Touch up marred or damaged shop prefinished items.
- C. Remove unfinished louvers, grilles, covers and access panels on mechanical and electrical components and paint separately.
- D. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- E. Paint interior surfaces of air ducts and convector and heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit sight line.
 - 1. Paint dampers exposed behind louvers, grilles, and convector and heating to match face panels.
- F. Paint exposed conduit and electrical equipment occurring in finished areas.
- G. Paint both sides and all edges of plywood backboards for electrical and telephone equipment with one coat of light to medium gray paint before installation of equipment.
- H. Reinstall electrical plates, hardware, light fixture trim, clocks, speakers and fittings removed prior to finishing.
- I. Paint all equipment located on roofs, including aluminum exhaust fans, gravity relief vents, appliance exhausts and all equipment unless factory finish is acceptable to Architect.
- J. Refer to Division 23 and Division 26 for schedule of color coding and identification banding of equipment, ductwork, piping and conduit.

3.8 CLEANING AND PROTECTION

- 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 material 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.
- D. During progress of work remove from site discarded paint materials, rubbish, cans and rags at end of each work day. **DISPOSE OF ALL MATERIALS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.**
- E. Upon completion of painting work, clean window glass and other paint-spattered surfaces.
- F. Protection:
 - 1. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting.

2. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
3. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

3.9 PAINT SYSTEM SCHEDULE - EXTERIOR PAINT SYSTEMS

A. CONCRETE MASONRY UNITS (exterior, new construction, painted finish):

1. 1st Coat - Acrylic Block Filler
 - a. "S-W, Heavy-Duty Block Filler, Interior/Exterior Acrylic, B42W150"
 - b. *Apply filler coat at a rate to ensure complete coverage with pores filled.
2. 2nd Coat - 100% Acrylic Emulsion Topcoat
 - a. "S-W, Metalatex, Semi-Gloss Coating, B42 Series"
3. 3rd Coat - 100% Acrylic Emulsion Topcoat
 - a. "S-W, Metalatex, Semi-Gloss Coating, B42 Series"

B. STEEL, UNPRIMED (exterior, new construction, painted finish):

1. 1st Coat - Rust-Inhibitive Metal Primer
 - a. "S-W, Kem Bond HS, Universal Metal Primer"
 - b. *Color selected as most appropriate beneath finish topcoats.
2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.

C. STEEL, SHOP PRIMED (exterior, new construction, painted finish):

1. Touch-Up - Rust-Inhibitive Metal Primer
 - a. "S-W, Kem Bond HS, Universal Metal Primer"
 - b. *May use original primer if available.
 - c. *Color selected as most appropriate to match primer.
2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.

D. STEEL, GALVANIZED (exterior, new construction, painted finish):

1. 1st Coat - Universal Primer
 - a. "S-W, PRO Industrial, Pro-Cryl, Universal Primer, B66A00310"
 - b. *Gray.
 2. 2nd Coat - 100% Acrylic Emulsion
 - a. "S-W, Metalatex, Semi-Gloss Coating, B42W00111"
 3. 3rd Coat - 100% Acrylic Emulsion
 - a. "S-W, Metalatex, Semi-Gloss Coating, B42W00111"
 - b. *Not less than 3.0 mils dry film thickness.
- E. STEEL, ALL TYPES (exterior, existing and/or previously painted, painted finish):
1. 1st Coat - Rust-Inhibitive Metal Primer
 - a. "S-W, Kem Bond HS, Universal Metal Primer"
 - b. *Color selected as most appropriate beneath finish topcoats.
 - c. *Additional coats as required to cover existing color or correct rusting.
 - d. *Painter responsible to visit site and field verify surface prep required.
 2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.
- F. METAL DOORS AND FRAMES (exterior, new construction, painted finish):
1. Touch-Up - Rust-Inhibitive Metal Primer
 - a. "S-W, Kem Bond HS, Universal Metal Primer"
 - b. *May use original primer if available.
 - c. *Color selected as most appropriate to match primer.
 2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.
 - c. *Additional coats as required by Architect to achieve desired and intended result.
- G. PVC / PLASTIC / FIBERGLASS (exterior, new construction, painted finish):
1. 1st Coat - Latex Primer
 - a. "S-W, PrepRite ProBlock Latex Primer, B51 Series"
 - b. *White
 2. 2nd Coat - Latex Topcoat
 - a. "S-W, A-100 Exterior Latex Satin, A82 Series"

3. 3rd Coat - Latex Topcoat
"S-W, A-100 Exterior Latex Satin, A82 Series"

3.10 PAINT SYSTEM SCHEDULE - INTERIOR PAINT SYSTEMS

- A. STEEL, UNPRIMED (interior, new construction, painted finish):
 1. 1st Coat - Rust-Inhibitive Metal Primer
 - a. "S-W, Kem Bond HS, Universal Metal Primer"
 - b. *Color selected as most appropriate beneath finish topcoats.
 2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.
- B. STEEL, SHOP PRIMED (interior, new construction, painted finish):
 1. Touch-Up - Rust-Inhibitive Metal Primer
 - a. "S-W, Kem Bond HS, Universal Metal Primer"
 - b. *May use original primer if available.
 - c. *Color selected as most appropriate to match primer.
 2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.
- C. STEEL, GALVANIZED (interior, new construction, painted finish):
 1. 1st Coat - Solvent-Based Acrylic Coating
 - a. "S-W, Galvite HS, B50WZ30"
 2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.
- D. STEEL, ALL TYPES (interior, existing and/or previously painted, painted finish):
 1. 1st Coat - Rust-Inhibitive Metal Primer

- a. "S-W, Kem Bond HS, Universal Metal Primer"
 - b. *Color selected as most appropriate beneath finish topcoats.
 - c. *Additional coats as required to cover existing color or correct rusting.
 - d. *Painter responsible to visit site and field verify surface prep required.
 2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.
- E. METAL DOORS AND FRAMES (interior, new construction, painted finish):
1. Touch-Up - Rust-Inhibitive Metal Primer
 - a. "S-W, Kem Bond HS, Universal Metal Primer"
 - b. *May use original primer if available.
 - c. *Color selected as most appropriate to match primer.
 2. 2nd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 3. 3rd Coat - Urethane Alkyd Topcoat
 - a. "S-W, Industrial Urethane Alkyd Enamel, B54-150 Series, Gloss"
 - b. *Not less than 3.0 mils dry film thickness.
 - c. *Additional coats as required by Architect to achieve desired and intended result.
- F. GYPSUM DRYWALL / PLASTER WALL SURFACES (interior, new construction, painted finish):
1. 1st Coat - Latex Primer
 - a. "S-W, ProMar 200 Zero VOC, Interior Latex Primer, B28W02600"
 - b. *Tinted toward final color.
 2. 2nd Coat - Interior Latex Topcoat
 - a. "S-W, ProMar 200 Zero VOC, Interior Latex, Eg-Shel "
 3. 3rd Coat - Interior Latex Topcoat
 - a. "S-W, ProMar 200 Zero VOC, Interior Latex, Eg-Shel "
- G. GYPSUM DRYWALL / PLASTER WALL SURFACES (interior, existing and/or previously painted, painted finish):
1. 1st Coat - Latex Primer
 - a. "S-W, ProMar 200 Zero VOC, Interior Latex Primer, B28W02600"
 - b. *Painter responsible to visit site and field verify surface prep required.
 - c. *Additional coats as required to cover existing color and texture.
 2. 2nd Coat - Interior Latex Topcoat
 - a. "S-W, ProMar 200 Zero VOC, Interior Latex, Eg-Shel "

3. 3rd Coat - Interior Latex Topcoat
 - a. "S-W, ProMar 200 Zero VOC, Interior Latex, Eg-Shel "
- H. WOODWORK (interior, new construction, stained/transparent finish):
 1. Filler -Pore Filler (for open-grained wood only)
 - a. "S-W, Sher-Wood, Natural Filler"
 - b. *Do not sand filler coat. Allow to completely dry before topcoating.
 - c. *Tint towards shade of stain.
 2. 1st Coat - Interior Oil Stain
 - a. "S-W, Wood Classics, Interior Oil Stain, A49-200 Series" (quart size)
 - b. "S-W, Wood Classic, Interior Oil Stain 250, A49-800 Series" (gallon size)
 3. 2nd Coat - Interior Oil Varnish
 - a. "S-W, Wood Classics, Waterborne Polyurethane Varnish, A68 Series, Satin"
 4. 3rd Coat - Interior Oil Varnish
 - a. "S-W, Wood Classics, Waterborne Polyurethane Varnish, A68 Series, Satin"
 5. 4th Coat - Interior Oil Varnish
 - a. "S-W, Wood Classics, Waterborne Polyurethane Varnish, A68 Series, Satin"
 - b. *Sand between each coat, unless otherwise indicated.
- I. PVC / PLASTIC / FIBERGLASS (interior, new construction, painted finish):
 1. 1st Coat - Waterborne Acrylic Primer
 - a. "S-W, Multi-Purpose Interior/Exterior Latex Primer Sealer, B51 Series"
 - b. * Off White
 2. 2nd Coat - Interior Acrylic Topcoat
 - a. "S-W, ProClassic Waterborne, Interior Acrylic Enamel Satin, B20 Series"
 3. 3rd Coat - Interior Acrylic Topcoat
 - a. "S-W, ProClassic Waterborne, Interior Acrylic Enamel Satin, B20 Series"
 - b.
- J. CONCRETE SURFACES (interior, existing and/or previously painted, painted finish):
 1. 1st Coat - Acrylic Block Filler
 - a. "S-W, Heavy-Duty Block Filler, Interior/Exterior Acrylic, B42W46"
 - b. *Painter responsible to visit site and field verify surface prep required.
 - c. *Additional coats as required to cover existing color and texture.
 2. 2nd Coat - Interior Latex Topcoat
 - a. "S-W, ProMar 200 Zero VOC, Interior Latex, Eg-Shel"
 3. 3rd Coat - Interior Latex Topcoat
 - a. "S-W, ProMar 200 Zero VOC, Interior Latex, Eg-Shel"

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PART 4 - SUBMITTAL CHECKLIST

- A. Product Data.
- B. Samples and Draw Downs.
- C. Mock-Ups.
- D. Compatibility Tests.

END OF SECTION 09 90 00

SECTION 10 13 00.02 - INTERIOR SIGNS

PART 1 - GENERAL

1.01 WORK INCLUDED

1. Interior signage as indicated on the Drawings and specified herein, including:
 - a. Non-illuminated room identification signs.

1.02 SUBMITTALS

- A. Product Data:
 1. Submit manufacturer's product data, cutsheets, specifications and installation details to illustrate conformance with the specifications and for selection and/or verification of all sign layout and construction items.
- B. Signage Layout:
 1. Provide initial layout of signage and lettering, including the actual spacing and layout required for the surface to be installed on.
 2. Draw and indicate layout to scale, with field verified measurements included.
- C. Mounting Template:
 1. Once a final layout has been approved, supplier shall provide the Contractor with a full-scale mounting template for proper positioning of studs and fasteners.
- D. Samples:
 1. Submit full size samples of actual sign for each type specified.
 2. Submit full size paper template of dimensional lettering signs.
 3. Submit color charts for color selections.
 4. Submit actual color and finish samples as requested for selection of verification.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver signs in manufacturer's unopened packages, with labels intact.
- B. Store and handle letters so as to prevent damage or deterioration.

PART 2 - PRODUCTS

2.01 ROOM IDENTIFICATION SIGNS

- A. Typical Flat Wall Signs:
 1. Basis of Specifications: "ASI Sign Systems", InTouch.
- B. Type of Graphics:
 1. .080" thick matt acrylic faceplate laminated to a .080" thick acrylic back.
 2. Raised etched tactile letters welded to front surface of plaque.
 3. Letters and numerals shall also be included in raised braille, color same as background.
 4. Copy to be centered, unless indicated otherwise.

5. Signs are to be unframed.
6. Typeface: Uppercase 3/4" high.
7. Font: As selected from manufacturer's entire standard selection.
8. Square corners.
9. Size: as shown on Drawings.

2.07 COORDINATION

- A. Colors shall be selected from manufacturer's entire standard selection, panel and type.
- B. Blank Back Plate:
 1. Flat and smooth panel.
 2. Material and color to match plaque.
 3. Size to match plaque.
 4. Provide for any sign where plaques need to be installed on a glass sidelight, transom or window, or where backside and/or mounting is otherwise exposed to view. Provide when and where directed by Architect, whether indicated or not, for location of sign installation designated.
 5. Field verify all locations of signs with Architect prior to mounting. Relocate as required.

2.08 TYPES OF SIGNS

- A. The following signs shall be provided throughout the project, whether indicated or not:
 1. All restrooms shall be identified by room name, pictogram, and universal symbol of accessibility.
 2. All fire extinguishers shall be identified by universal symbol for extinguisher.
 3. All exits shall be identified with tactile exit sign.
 4. Typical sign elevations are indicated on Drawings. See miscellaneous details on Drawings.

2.09 SIGN SCHEDULE (ROOM IDENTIFICATION SIGNS)

- A. Sign Type: A
Location: 101A, 108A, 112
- B. Sign Type: B
Location: Fire Extinguisher Cabinet in 108A
- C. Sign Type: C
Location: 107

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install all signs square, plumb, level, and true.
- B. Adhesive Attachment:
 1. Install using manufacturer's standard double-click foam tape, or combination of tape and adhesive.
 2. Use for typical installations on gypsum board or like surfaces.

C. Fastener Attachment:

1. In addition to the adhesive method above, install one screw fastener through face of sign and into the substrate at all corners. Finish paint screw heads to match face of sign.
2. Use for installations on masonry walls, exterior mounting, epoxy paint or areas prone to either wet or vandal conditions.
3. Mount sign on wall adjacent to latch side of door, unless otherwise indicated. If wall space does not permit this location, consult Architect for mounting desired.
4. Mounting height shall be 60" above finish floor to centerline of the sign, unless otherwise indicated.
5. Install blank back plate on opposite side of plaque where applicable.

SUBMITTAL CHECK LIST

1. Manufacturer's Literature.
2. Signage Layout.
3. Mounting Template.
4. Samples.

END OF SECTION 10 13 00.02

SECTION 10 26 13 – WALL AND CORNER GUARDS

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Extent of wall and corner guards as indicated on Drawings and specified herein.

1.02 QUALITY ASSURANCE

- A. Deliver materials to project site in original packages or containers clearly labeled to identify manufacturer, brand name, quality or grade and fire hazard classification.
- B. Store materials in original undamaged packages or containers. Store materials in a clean, dry location protected against damage of any kind.
- C. Illuminate areas of installation using building's permanent lighting system; temporary lighting alone will not be acceptable.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's product data sheets, cutsheets, specifications and installation instructions.
 - 2. Include data on physical characteristics, durability, fade resistance and flame resistance characteristics.
- B. Samples:
 - 1. Submit actual samples of corner guards selected. If color not selected, submit samples for selection by the Architect from manufacturer's entire selection of type indicated. Printed color chart alone is not acceptable.

1.04 WARRANTY

- A. Provide manufacturer's standard 5-year warranty.

PART 2 – PRODUCTS

2.01 MATERIAL

- A. Provide one of the following approved products as indicated on the Drawings:
1. Surface-mounted Corner Guards (Mounted to continuous aluminum retainer- 2" wing size):
 - a. "Koroseal Wall Protection Systems"; Korogard G100 Vinyl Corner Guards.
 - b. "Pawling;" Impact Protection Systems-Corner Guard, CG-20.
 - c. "Construction Specialties;" Acrovyn Corner Guard, SSM-20AN
 - d. "In Pro Architectural Products"; 160 High Impact Corner Guard
 2. Description:
 - a. Snap-on extruded vinyl corner guards with continuous aluminum retainer.
 - b. Dimensions: Leg length: 2", Angle: 90 degrees w/ 1/4" radius.
 - c. Height: As noted on Drawings.
 - d. Profile: High-impact vinyl acrylic extrusion with rounded corners.
 - e. Thickness: nominal .080".
 - f. Flame Resistance: Class A fire rating (ASTM E 84).
 - g. Texture: Pebble.
 - h. Provide injection-molded top and bottom caps.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Verify that wall surfaces are acceptable to receive the specified guard systems. Do not begin installation until acceptable conditions have been corrected.

3.02 INSTALLATION

- A. Install Corner Guards securely to wall according to manufacturer's instructions and recommendations.
- B. Install Corner Guards accurately in location, alignment, and elevation.
- C. Install Corner Guards full height of door opening or wall opening, unless indicated otherwise.
- If desired by the Architect in the field, field cut units to lesser height within openings.
- D. Remove excess adhesive along edges.

3.03 ADJUST AND CLEAN

- A. Remove surplus materials, rubbish, and debris resulting from corner guard installation upon completion of work, and leave areas of installation in neat, clean condition.

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- B. Clean corner guards and adjacent wall surfaces of all stains, marks and adhesives.

SUBMITTAL CHECK LIST

- 1. Product Data.
- 2. Samples.

END OF SECTION 10 26 13

SECTION 10 28 13 - TOILET ACCESSORIES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Toilet accessories as shown on Drawings and specified herein.
- B. Installation of owner-furnished toilet accessories as shown on Drawings and specified herein.

1.02 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Submit manufacturer's "cut sheets" for each item specified, showing installation details, and product information.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job with manufacturer's unopened packages, with label in tact.
- B. Store and handle products so as to avoid damage. Remove all damaged items from the job site.
- C. Maintain protective covers until Substantial Completion.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, from one of the following manufacturers:
 - 1. "Bobrick"
 - 2. "Bradley"
 - 3. "ASI"
 - 4. "AJW Architectural Products"
- B. See Specifications Section 01 62 00 - Product Options and Substitutions.

2.02 MATERIALS

A. Grab Bars:

1. "Bobrick" B-6806 Series.
2. Surface mounted, stainless steel, safety grip finish, concealed mounting, snap-flange cover.
3. Provide 1-1/2" diameter x sizes and configurations as shown on Drawings.
4. Provide at locations as shown on Drawings, or if not shown, provide as follows:
 - a. 36" long horizontally on rear wall of all ADA stalls.
 - b. 42" long horizontally on side wall of all ADA stalls and ambulatory stalls.
 - c. 18" long vertically on side wall of all ADA stalls and ambulatory stalls.

B. Toilet Paper Dispensers (Typical Height Installation):

4. "Bobrick" B-4288, "Contura" Series.
5. Dual-roll type.
6. Surface-mounted, stainless steel, satin finish.
4. Provide at locations as shown on Drawings, or if not shown, provide one per water closet.
5. Coordinate location with partition door and other accessories.
7. 6. Provide this type of dispenser at all typical height locations, except where other types are specifically indicated for use.

C. Sanitary Napkin Disposals:

1. "Bobrick" B-270, "Contura" Series.
2. Surface-mounted, stainless steel, satin finish.
3. Provide at locations as shown on Drawings, or if not shown, provide one per female water closet.
4. Coordinate location with partition door and other accessories.

D. Mirrors (Frameless):

1. "Bradley" 747 Series Frameless mirror.
2. 1/4" select float glass mirror.
3. Edges ground and polished smooth.
4. Surface mounted, concealed fasteners.
5. Install centered on lavatory or sink.
6. Provide sizes as shown on Drawings, or if not shown, provide 24"x36".
7. Provide at locations as shown on Drawings, or if not shown, provide one per lavatory or sink.

E. Robe / Coat / Towel Hooks (Single Hook):

1. "Bobrick" B-76717.
2. Surface mounted, stainless steel, satin finish, concealed mounting.
3. Provide at locations as shown on Drawings.
4. Provide one on inside of each toilet partition stall door if partitions do not already include one.
5. Provide two at each shower stall.
6. Mount one hook at ADA height at all ADA shower stalls.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Finish surfaces shall be complete prior to installation of accessories.
- B. Verify all materials that anchoring devices are compatible with accessories.

3.02 INSTALLATION

- A. Drill holes of proper size for required anchoring devices to be concealed in finish wall behind accessories.
- B. Install accessories plumb and true.
- C. Grab Bars:
 - 1. Anchor grab bars on wall and partition of end toilet compartment and at urinals indicated.
 - 2. Install as recommended by manufacturer to withstand 500lb. downward pull.

3.03 MOUNTING HEIGHTS

- A. See Drawings for mounting heights.
- B. If not shown on Drawings, confer with Architect for heights required.
- C. All mounting heights shall meet all current Codes and ADA requirements.

3.04 ADJUSTING AND CLEANING

- A. Check operation of accessories; make final adjustment as required.
- B. Remove protective covers.
- C. Clean stainless steel of all paints, and other markings, with mild detergent and water.

3.05 PROTECTION

- A. Protect accessories from damage until Substantial Completion.
- B. Replace any damaged accessories.

SUBMITTAL CHECK LIST

- 1. Manufacturer's Literature.

END OF SECTION 10 28 13

SECTION 10 44 00 - FIRE EXTINGUISHERS AND CABINETS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Fire extinguishers and cabinets as shown on the Drawings and specified herein.

1.02 QUALITY ASSURANCE

- A. Provide fire extinguishers which are U.L. listed and bear U.L. "Listing Mark" for type, rating, and classification of extinguisher indicated.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's product data sheets, cutsheets, specifications, materials description, installation and maintenance instructions.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job in manufacturer's unopened packages with labels intact.
- B. Store and handle products so as to prevent damage. Remove all damaged items from the job site.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Fire Extinguishers:
 - 1. Dry Chemical Type:
 - a. Basis of Specification: "JL Industries, Inc." Cosmic 10E.
 - b. Fire Class: ABC.
 - c. U.L. Rating: 4A-80BC.
 - d. Capacity: 10 pounds.
- B. Fire Extinguisher Cabinets:
 - 1. Use with Dry Chemical Type Extinguishers (Semi-Recessed Mounted):
 - a. Basis of Specification: "JL Industries, Inc." Academy.
 - b. Tub: Cold rolled steel with white powder coat finish.

- c. Trim: Semi-recessed 1-1/2" square-edge trim, aluminum, clear anodized finish.
- d. Door Style: Full glazing.
- e. Door Glazing: Clear acrylic with red vertical FE lettering.
- f. Hardware: Continuous hinge, roller catch, pull handle. Match trim finish.

- 2. Provide fire-rated cabinets at all Rated Walls and Smoke Partitions.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install extinguishers in cabinets and on brackets as indicated on the Drawings.
- B. Install cabinets and brackets square and plumb, and in accordance with manufacturer's instructions.
- C. Install in compliance with all applicable Federal, State, and local regulations.
- D. Install cabinets recessed in masonry and stud framed walls as applicable.
- F. Install cabinets so as to locate extinguishers at a height of 3'-8" from floor to top of extinguisher handle (for bracket mounted extinguishers) and to center of door pull (for extinguishers in a cabinet), unless otherwise indicated on the Drawings.

3.02 ADJUSTING AND CLEANING

- A. Check extinguishers for proper charge in operation.
- B. Assure that all doors and hardware operate smoothly and freely.
- C. Adjust or replace defective items as required.

3.03 PROTECTION

- A. Protect cabinets and extinguishers from damage and deterioration until time of Substantial Completion. Touch up any marred surfaces.

SUBMITTAL CHECK LIST

- 1. Product Data.

END OF SECTION 10 44 00

SECTION 22 05 00 - BASIC PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Basic Mechanical Requirements specifically applicable to Division 22 Sections.
- B. Refer to Division 1 and Conditions of the Contract for additional requirements that apply to work of Division 22.
- C. Coordination required for submittals of mechanical and equipment utility incentives and rebates.

1.2 REGULATORY REQUIREMENTS

- A. All work shall be executed and inspected in accordance with all local or state codes, laws, ordinances, rules and regulations applicable to the particular class of work.
- B. If the Contractor discovers the drawings or specifications are in conflict with the above mentioned laws, rules and regulations, he shall promptly notify the Architect in writing so any necessary changes can be accomplished. If the Contractor performs any work without notice as required above, he will bear the costs for corrective action.
- C. The Contractor is responsible for all applicable service charges, fees, permits royalties and the like.
- D. Mechanical work shall include complete, code-complying, fully operating and functional systems.

1.3 PROJECT/SITE CONDITIONS

- A. The drawings indicate required size and points of termination for pipes and suggest proper routes of pipe to conform to structure, avoid obstructions and preserve clearances. However, it is not intended that these drawings indicate all necessary offsets and it is the Contractor's responsibility to install piping in such a manner required to conform to structure, avoid obstructions, preserve headroom and keep openings and passageways clear without further instruction from Architect/Engineer or cost to the Owner.
- B. Contractor is responsible for coordinating installation and providing offsets as required for a complete and finished installation. Do not make up piping runs until all existing conditions have been examined, work of other trades coordinated, and a field coordinated layout determined. Notify Architect/Engineer of potential conflicts before making up ductwork or piping.
- C. For purposes of clearness and legibility, drawings are essentially diagrammatic, and although size and location of equipment are drawn to scale wherever possible, the Contractor shall make use of all data in all of the contract documents and shall verify this information at building site.

1.4 CUTTING AND PATCHING

- A. Cut existing walls, floors, ceilings, roofs, etc. necessary for the proper installation of new materials, equipment and related plumbing items. Provide all necessary framing, lintels, hangers, etc. to maintain the structural integrity of the building system after cutting.
- B. Contractor is responsible for cost to restore or patch adjacent surfaces to original condition. Employ proper professional trade for patching and finishing exposed surfaces.

1.5 UTILITY INCENTIVES AND REBATES

- A. Coordinate materials to and through the Architect as required by utility companies for submission of incentives and rebates.
- B. Provide all paperwork as requested by the Architect for this purpose on behalf of the Owner.
 - 1. Product submittals and cutsheets of all installed materials and items.
 - 2. Invoices including information such as; make/model, motor information, electrical information, SEER/EER ratings, quantities, unit prices, total costs, etc.
 - 3. Contractor shall sign all required forms as necessary for completion of the submission.
 - 4. Submittal will be coordinated through and submitted by the Architect on behalf of the Owner.
- C. Contractor may be required to coordinate timing for ordering of materials and products to correspond to time requirements by the utility granting incentive or rebate. Some products may require granting of the incentive and rebate prior to ordering of materials. This may result in ordering of materials in multiple packages and at differing times for multiple deliveries. Contractor is to coordinate these requirements as communicated by the Architect.
- D. Payment of all incentives and rebates will be made to the Owner, not the Contractor.

END OF SECTION 22 05 00

SECTION 22 05 53 – PLUMBING IDENTIFICATION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to mark and identify all piping, valves, etc. throughout the project.

1.2 REFERENCES

- A. ANSI A13.1 - "Scheme for the Identification of Piping Systems".

PART 2 - PRODUCTS

- 2.1 All main elements of mechanical equipment shall be identified with signs made of laminated plastic with 1/8 inch or larger engraved letters. Signs shall be securely attached by rustproof screws or some other permanent means. Information on sign shall include name of equipment, rating, maintenance instructions, and any other important data.
- 2.2 All non-insulated piping shall be painted continuously in Mechanical Rooms where exposed, and elsewhere throughout project where exposed to view.
- 2.3 All exposed and accessible piping (above removable ceilings, etc) above 1-1/4 inch in diameter shall be identified as to function, zone, and direction of flow by means of an all-temperature adhesive backed vinyl tape. Tape for piping 3 inches and larger shall be 2-1/4 inch high with 2 inch high legend. Tape for smaller than 3 inches shall be 1-1/8 high with 3/4 inch legend. Background colors of tape shall conform to ANSI Standard A-13.1. Piping shall be identified at permanent locations, but in no case at intervals greater than 15 feet.
- 2.4 All valves shall be identified with brass tags of .051 inch thickness, 1 inch by 3 inches or larger, with 1/8 inch high stamped letters. The tag shall be attached to valves with rustproof stainless steel key chains. Valve tags shall have wording such as "Heating Water Supply" so show the function of the valve.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Complete all piping insulation and painting prior to application of tags and labels.

3.2 COLOR CODING

A. Pipe identification tape shall be as noted below:

<u>PIPING TYPE</u>	<u>LABEL COLOR</u>	<u>LABEL TEXT</u>	<u>TEXT COLOR</u>
Domestic Cold Water	Green	"Cold Water"	Black
Domestic Hot Water	Yellow	"Dom. Hot Water"	Black
Domestic Hot Water Return	Yellow	"Dom. Hot Water Return"	Black
Sanitary Drainage	Green	"Sanitary Sewer"	Black
Condensate Drainage	Green	"Condensate Drainage"	Black
Natural Gas	Yellow	"Natural Gas"	Black

END OF SECTION 22 05 53

SECTION 22 07 00 - PIPING INSULATION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Piping Insulation.
- B. Jackets and Accessories.

1.2 REFERENCES

- A. ANSI/ASTM C195 - Mineral Fiber Thermal Insulation Cement.
- B. ANSI/ASTM C547 - Mineral Fiber Performed Pipe Insulation.
- C. ANSI/ASTM C552 - Cellular Glass Block and Pipe Thermal Insulation.
- D. ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- E. ASTM C449 - Mineral Fiber Hydraulic - setting Thermal Insulating and Finishing Cement.
- F. ASTM E84 - Surface Burning Characteristics of Building Materials.

1.3 QUALITY ASSURANCE

- A. Applicator: Company specializing in piping insulation application with three years minimum experience.
- B. Materials: Flame spread/fuel contributed/smoke developed rating of 25/50/50 in accordance with ASTM E84.

1.4 SUBMITTALS

- A. Submit product data including thermal conductivity and standards compliance.
- B. Include product description, list of materials and thickness for each service, and locations.
- C. Submit manufacturer's installation instructions.

PART 2 - PRODUCTS

2.1 INSULATION

- A. Provide products, as approved by the Architect, from one of the following acceptable manufacturers:
 - 1. Knauf
 - 2. Certainteed
 - 3. Pittsburg Corning
 - 4. Manville
 - 5. Owens/Corning
- B. Type A:
 - 1. Glass Fiber Insulation.
 - 2. ANSI/ASTM C547; "K" value of 0.24 at 75°F; noncombustible.
 - 3. Fittings insulation shall be 25/50 pre-fittings with fiberglass inserts.
- C. Type B:
 - 1. Cellular Glass Insulation.
 - 2. ANSI/ASTM C552; maximum water vapor transmission rating of 0.1 perms; "K" value of 0.40 at 75°F.

2.2 JACKETS

- A. Interior Applications:
 - 1. Vapor Barrier Jackets: Kraft reinforced foil vapor barrier with self-sealing adhesive joints.
- B. Exterior Applications:
 - 1. Aluminum Jackets: ASTM B209; 0.020 inch thick; smooth finish.

2.3 ACCESSORIES

- A. Insulation Bands: 3/4 inch wide; 0.015 inch thick galvanized steel.
- B. Metal Jacket Bands: 3/8 inch wide; 0.38 thick aluminum.
- C. Insulating Cement: ANSI/ASTM C195; hydraulic setting mineral wool.
- D. Finishing Cement: ASTM C449.
- E. Fibrous Glass Cloth: Untreated; 9 oz/sq yd weight.
- F. Adhesives: Compatible with insulation.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Install materials after piping has been tested and approved.

3.2 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Continue insulation with vapor barrier through penetrations.
- C. In exposed piping, locate insulation and cover seams in least visible locations.
- D. On insulated piping with vapor barrier, insulate fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.
- E. On insulated piping without vapor barrier and piping conveying fluids 140°F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation at such locations.
- F. Provide an insert, not less than 6 inch long, of same thickness and contour as adjoining insulation, between support shield and piping, but under the finish jacket, on piping 2 inch diameter or larger, to prevent insulation from sagging at support points. Inserts shall be cork or other heavy density insulating material suitable for the planned temperature range. Factory fabrication inserts may be used.
- G. Neatly finish insulation at supports, protrusions, and interruptions.
- H. Jackets:
 - 1. Indoor, Concealed Applications: Insulated pipes conveying fluids above ambient temperature shall have standard jackets, with or without vapor barrier, factory-applied or field applied. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass cloth and adhesive. PVC jackets may be used.
 - 2. Indoor, concealed Applications: Insulated dual-temperature pipes of pipes conveying fluids below ambient temperature shall have vapor barrier jackets, factory-applied or field-applied. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe, and finish with glass cloth and vapor barrier adhesive.
 - 3. Indoor, Exposed Applications: For pipe exposed in mechanical equipment rooms or in finished spaces, insulate as for concealed applications. Finish with rigid PVC jackets.Exterior Applications: Provide vapor barrier jackets. Cover with aluminum jacket with seams located on bottom side of horizontal piping. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement.

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3.3 SCHEDULE

<u>PIPING</u>	<u>TYPE</u>	<u>PIPE SIZE</u>	<u>THICKNESS*</u>
Domestic Hot Water	A	2 inches	1/2 inch
		≥2 inches	1 inch
Domestic Cold Water	A	<2 inches	1/2 inch
		≥2 inches	1 inch

*All insulation in mechanical rooms shall be increased 1/2 inches in thickness.

END OF SECTION 22 07 00

SECTION 22 10 00 - PLUMBING PIPING INSIDE BUILDING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete the following work indicated, noted and detailed on drawings and specified herein:
 - 1. Pipe and pipe fittings.
 - 2. Valves.
 - 3. Sanitary sewer drain, waste and vent piping system.
 - 4. Storm sewer piping system.
 - 5. Domestic water piping system.
 - 6. Condensate piping system.
 - 7. Hose bibbs.

1.2 REFERENCES

- A. ASTM B88 - Seamless Copper Water Tube.
- B. ASTM B306 - Copper Drainage Tube (DWV).
- C. ASTM D1785 - PVC Plastic Pipe, schedule 40, 80 and 120.
- D. ASTM D2665 - PVC Plastic Drain, Waste and Vent Pipe and Fittings.
- E. ASTM F876/F877 – Crosslinked Polyethylene (PEX) Tubing.

1.3 QUALITY ASSURANCE

- A. Valves: Manufacturer's name and pressure rating marked on valve body.

1.4 SUBMITTALS

- A. Submit product data.
- B. Include data on pipe materials, pipe fittings, valves and accessories.

PART 2 - PRODUCTS

2.1 SANITARY SEWER DRAIN, WASTE AND VENT PIPING

- A. PVC Schedule 40.
- B. Fittings: PVC Schedule 40, designed for solvent welded connections.

2.2 STORM SEWER PIPING

- A. PVC Schedule 40.
- B. Fittings: PVC Schedule 40, designed for solvent welded connections.

2.3 DOMESTIC WATER PIPING

- A. Above Grade:
 - 1. Type "L" hard temper copper tubing.
 - a. Wrought copper solder fittings or mechanically formed Tee connections above grade for pipe sizes up to and including 4".
 - b. Solder with Sil-Fos or approved equal.
 - c. Victaulic grooved copper connection may be used for pipe sizes 2" through 6".
 - 2. PEX Piping:
 - a. "Zurn" ZurnPEX® Non-Barrier Tubing or equal.
 - b. Conform to SDR-9 dimensional standards.
 - c. Maximum working pressures:
 - 1) 160psi @ 73°F
 - 2) 100psi @ 180°F
 - 3) 80psi @ 200°F
 - d. Pipe is to comply with all requirements of the Current Plumbing Code.
 - e. Fittings to be compatible with piping and appropriate for installation conditions.
- B. Below Grade:
 - 1. Type "K" hard temper copper tubing.
 - a. Wrought copper solder fittings below grade inside and outside building for pipe sizes up to 3".
 - 2. PEX Piping:
 - a. "Zurn" ZurnPEX® Non-Barrier Tubing or equal.
 - b. Conform to SDR-9 dimensional standards.
 - c. Maximum working pressures:
 - 1) 160psi @ 73°F
 - 2) 100psi @ 180°F
 - 3) 80psi @ 200°F
 - d. Pipe is to comply with all requirements of the Current Plumbing Code.

- e. Provide PVC sleeve for pipe burial.
- f. Provide tracer or locating wiring as required for future locates.
- g. Fittings to be compatible with piping and appropriate for installation conditions.

C. Valves:

- 1. Shut-off service shall be gate or ball type.
- 2. Flow check service shall be swing check type.
- 3. Pressure Rating: 160 psi minimum.

D. Water Hammer Arresters:

- 1. "Zurn", Z-1700 Shoktrol.
 - a. Size 100: 1-11 Fixture Units.
 - b. Size 200: 12-32 Fixture Units.
 - c. Size 300: 33-60 Fixture Units.
 - d. Size 400: 61-113 Fixture Units.
 - e. Size 500: 114-154 Fixture Units.

2.4 CONDENSATE PIPING

- A. PVC Schedule 40.
- B. Fittings: PVC Schedule 40, designed for solvent welded connections.
- C. Use Type "L" hard temper copper tubing with wrought copper solder fittings or mechanically formed Tee connections if within a plenum space, where PVC is not allowed for installation, or where otherwise indicated.

2.5 HOSE BIBBS

A. Freezeless Hose Bibb:

- 1. Freezeless wall hydrant.
- 2. Type as indicated or scheduled on drawings. If not indicated, provide "Woodford", Model 70P.
- 3. Loose tee key or wheel handle as indicated or scheduled on drawings. If not indicated, provide loose tee key.
- 4. Chrome.

B. Wheel Handles (where scheduled or indicated to be provided):

- 1. Provide polycarbonate wheel handles in interior areas, unless otherwise indicated.
- 2. Provide metal wheel handles in exterior areas, unless otherwise indicated.
- 3. Provide metal wheel handles in interior areas of manufacturing or in applications where polycarbonate may be damaged or abused, unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- B. Route piping in orderly manner and maintain gradient.
- C. Install piping to conserve building space and not interfere with use of space.
- D. Group piping whenever practical at common elevations.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints or connected equipment.
- F. Provide clearance for installation of insulation and access to valves and fittings.
- G. Slope water piping and arrange to drain at low points.
- H. Prepare pipe, fittings, supports and accessories not prefinished, ready for finish painting. Refer to Section 09 90 00.
- I. Establish invert elevations, slopes for drainage 1/8 inch per foot.
- J. Install valves with stems upright or horizontal, not inverted.
- K. No double-wye fittings will be permitted. Where the fixture/branch sanitary piping connects to the sanitary main, single wye fittings are to be used.
- L. Short 1/4 turn radius on sanitary piping elbows is prohibited.
- M. Where sanitary piping makes a change in direction, two 45-degree fittings or a "medium sweep" shall be used.

3.2 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections.
- B. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.
- C. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers. Install at all plumbing fixture drops, or group of fixtures drop, above ceiling and with water hammer arrestors at the high point.
- D. Install water hammer arrestors as follows:
 - 1. Install in an upright position.
 - 2. Located at the remote end of a long run of piping and as close to the point of valve closure as possible, unless otherwise indicated.

3. Multiple fixtures, branch line less than 20': Measured from the start of the horizontal branch line to the last fixture supply on the line. Locate at the end of the branch line between the last two fixtures served.
4. Multiple fixtures, branch line more than 20': Measured from the start of the horizontal branch line to the last fixture supply on the line. Use two units whose capacities total the requirements of the branch. Locate one unit between the last and next to last fixture and the other unit approximately midway between the fixtures.

3.3 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed and clean.
- B. Sterilization shall be performed in accordance with State Board of Health Rules and Regulations.
- C. Provide Certification from Board of Health after sterilization.

3.4 SERVICE CONNECTIONS

- A. Provide new sanitary sewer services. Before commencing work check tap locations, invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage.

PART 4 - SUBMITTAL CHECK LIST

- A. Product Literature

END OF SECTION 22 10 00

SECTION 22 14 00 - PLUMBING SPECIALTIES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete the following work indicated, noted and detailed on drawings and specified herein:
 - 1. Floor Drains.
 - 2. Trap Primers.
 - 3. Cleanouts.

1.2 REFERENCES

- A. ANSI A112.21.1 - Floor Drains.

1.3 QUALITY ASSURANCE

- A. Manufacturer: For each product specified, provide components by same manufacturer throughout.

1.4 SUBMITTALS

- A. Submit shop drawings and product data.
- B. Include component sizes, rough-in requirements, service sizes and finishes.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide products, as approved by the Architect, from one of the following acceptable manufacturers:
 - 1. "Zurn".
 - 2. "Wade".
 - 3. "Josam".
 - 4. "J.R. Smith".

2.2 FLOOR DRAINS

- A. Floor Drain:

1. Type as indicated or scheduled on drawings. If not indicated, provide the following items.
2. "Zurn", Model ZN-415-O, where integral cleanout is not required by code.
3. "Zurn", Model ZN-456-B, where integral cleanout is required by code.
4. Polished nickel bronze top.
5. Provide trap where required by code.

B. Floor Drain (for use with trap primer):

1. Type as indicated or scheduled on drawings. If not indicated, provide the following items.
2. "Zurn", Model ZN-415-B-P-V.
3. Polished nickel bronze top.
4. Trap primer connection.
5. Adjustable to finished surface after concrete has set.

2.3 TRAP PRIMERS

A. Trap Primer:

1. Type as indicated or scheduled on drawings. If not indicated, provide the following items.
2. "Zurn", Model Z-1022.
3. Single unit may serve up to 4 floor drains.
4. Provide outlet distribution as required for drains and orientation served.

2.4 CLEANOUTS

A. Clean Out:

1. Type as indicated or scheduled on drawings. If not indicated, provide the following items. Cleanout shall be designed for use within the flooring material installed. Carpet locator markers are to be used in carpeted areas.
2. "Zurn", Model ZN-1400-SG (outside building in concrete).
3. "Zurn", Model ZN-1400-T (exposed concrete areas).
4. "Zurn", Model ZN-1400-CF (carpet areas).
5. "Zurn", Model ZN-1400-TX (resilient tile areas).
6. "Zurn", Model ZN-1400-T (tile areas).
7. "Zurn", Model ZN-1400-Z (terrazzo areas).
8. Cast iron cleanout.
9. Polished nickel bronze top.
10. Adjustable to finished surface after concrete has set.
11. Size to match piping it serves, full length to outlet.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate core drilling of floor construction to receive drains to required invert elevations.

3.2 INSTALLATION AND APPLICATION

- A. Install specialties in accordance with manufacturer's instructions to permit intended performance.
- B. Extend cleanouts to wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- C. Install first hanger support at the elbow connection to the horizontal pipe directly below the drain.

END OF SECTION 22 14 00

SECTION 22 40 00 - PLUMBING FIXTURES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete the following work indicated, noted and detailed on drawings and specified herein:
 - 1. Water Closets.
 - 2. Lavatories.
 - 3. Stainless Steel Sinks.
 - 4. Faucets.
 - 5. Mop Sinks and Service Sinks.
 - 6. Water Heaters.

1.2 REFERENCES

- A. ANSI A112.6.1 - Supports for Off-the-Floor Plumbing Fixtures for Public Use.
- B. ANSI A112.18.1 - Finished and Rough Brass Plumbing Fixture Fittings.
- C. ANSI A112.19.2 - Vitreous China Plumbing Fixtures
- D. ANSI A112.19.5 - Trim for Water-Closet Bowls.

1.3 QUALITY ASSURANCE

- A. Fixtures: By same manufacturer for each product specified throughout.
- B. Trim: By same manufacturer for each product specified throughout.

1.4 SUBMITTALS

- A. Submit product data.
- B. Include fixtures, sizes, rough-in dimensions, utility sizes, trim and finishes.

1.5 OPERATIONAL AND MAINTENANCE DATA

- A. Submit operation and maintenance data.
- B. Include fixture trim exploded view and replacement parts lists.

1.6 WARRANTY

- A. Provide one year manufacturer's warranty.

PART 2 - PRODUCTS

2.1 PLUMBING FIXTURES

- A. Manufacturer's model numbers are shown on plans to establish a standard of quality only. Other acceptable manufacturer's fixtures may be substituted, as approved by the Architect.
- B. See Section 01 62 00 - Product Options and Substitutions for all requirements.

2.2 ACCEPTABLE MANUFACTURERS

A. Water Closets:

- 1. "American Standard"
- 2. "Kohler"
- 3. "Crane"
- 4. "Eljer"
- 5. "Zurn"
- 6. "Toto"

B. Lavatories:

- 1. "American Standard"
- 2. "Kohler"
- 3. "Crane"
- 4. "Eljer"
- 5. "Zurn"

C. Stainless Steel Sinks:

- 1. "Just"
- 2. "Elkay"
- 3. "American Standard"

D. Faucets:

- 1. "Delta"
- 2. "American Standard"
- 3. "Kohler"
- 4. "Zurn"
- 5. "Chicago Faucet"
- 6. "T&S Brass"

E. Mop Sinks and Service Sinks:

1. "Mustee"
2. "Florestone"

F. Water Heaters:

1. "Lochinvar"
2. "Rudd"
3. "State"
4. "Bradford White"
5. "AO Smith"

PART 3 - EXECUTION

3.1 INSPECTION

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.
- B. Verify adjacent construction is ready to receive rough-in work of this Section.

3.2 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid supplies to fixtures with screwdriver stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Install and secure fixtures in place with wall carriers and bolts.
- E. Seal fixtures to wall and floor surfaces with sealant, color to match fixture.
- F. See drawings for height and location of all fixtures.

3.3 ADJUSTING AND CLEANING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise or overflow.
- B. At completion clean plumbing fixtures and equipment.
- C. Solidly attach water closets to floor with lag screws. Lead flashing is not intended to hold fixture in place.

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PART 4 - SUBMITTAL CHECK LIST

A. Product Literature

END OF SECTION 22 40 00

SECTION 23 05 00 - BASIC MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Basic Mechanical Requirements specifically applicable to Division 23 Sections.
- B. Refer to Division 1 and Conditions of the Contract for additional requirements that apply to work of Division 23.
- C. Refer to Drawings M-801 and M-802 for additional specification requirements.
- D. Coordination required for submittals of mechanical and equipment utility incentives and rebates.

1.2 REGULATORY REQUIREMENTS

- A. All work shall be executed and inspected in accordance with all local or state codes, laws, ordinances, rules and regulations applicable to the particular class of work.
- B. If the Contractor discovers the drawings or specifications are in conflict with the above mentioned laws, rules and regulations, he shall promptly notify the Architect in writing so any necessary changes can be accomplished. If the Contractor performs any work without notice as required above, he will bear the costs for corrective action.
- C. The Contractor is responsible for all applicable service charges, fees, permits royalties and the like.
- D. Mechanical work shall include complete, code-complying, fully operating and functional systems.

1.3 PROJECT/SITE CONDITIONS

- A. The drawings indicate required size and points of termination for pipes and ducts, and suggest proper routes of pipe to conform to structure, avoid obstructions and preserve clearances. However, it is not intended that these drawings indicate all necessary offsets and it is the Contractor's responsibility to install piping and ducts in such a manner required to conform to structure, avoid obstructions, preserve headroom and keep openings and passageways clear without further instruction from Architect/Engineer or cost to the Owner.
- B. Contractor is responsible for coordinating installation and providing offsets as required for a complete and finished installation. Do not make-up duct work or piping runs until all existing conditions have been examined, work of other trades coordinated and a field coordinated layout determined. **Notify Architect/Engineer of potential conflicts before making up ductwork or piping.**
- C. For purposes of clearness and legibility, drawings are essentially diagrammatic, and although size and location of equipment are drawn to scale wherever possible, the Contractor shall make use of all data in all of the contract documents and shall verify this information at building site.

1.4 CUTTING AND PATCHING

- A. Cut existing walls, floors, ceilings, roofs, etc. necessary for the proper installation of new materials, equipment and related mechanical items. Provide all necessary framing, lintels, hangers, etc. to maintain the structural integrity of the building system after cutting.
- B. Contractor is responsible for cost to restore or patch adjacent surfaces to original condition. Employ proper professional trade for patching and finishing exposed surfaces.

1.5 UTILITY INCENTIVES AND REBATES

- A. Coordinate materials to and through the Architect as required by utility companies for submission of incentives and rebates.
- B. Provide all paperwork as requested by the Architect for this purpose on behalf of the Owner.
 - 1. Product submittals and cutsheets of all installed materials and items.
 - 2. Invoices including information such as; make/model, motor information, electrical information, SEER/EER ratings, quantities, unit prices, total costs, etc.
 - 3. Contractor shall sign all required forms as necessary for completion of the submission.
 - 4. Submittal will be coordinated through and submitted by the Architect on behalf of the Owner.
- C. Contractor may be required to coordinate timing for ordering of materials and products to correspond to time requirements by the utility granting incentive or rebate. Some products may require granting of the incentive and rebate prior to ordering of materials. This may result in ordering of materials in multiple packages and at differing times for multiple deliveries. Contractor is to coordinate these requirements as communicated by the Architect.
- D. Payment of all incentives and rebates will be made to the Owner, not the Contractor.

END OF SECTION 23 05 00

SECTION 23 05 53 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to mark and identify all piping, valves, controls, ductwork, etc. throughout the project.

1.2 REFERENCES

- A. ANSI A13.1 - "Scheme for the Identification of Piping Systems".

PART 2 - PRODUCTS

- 2.1 All main elements of mechanical equipment shall be identified with signs made of laminated plastic with 1/8 inch or larger engraved letters. Signs shall be securely attached by rustproof screws or some other permanent means. Information on sign shall include name of equipment, rating, maintenance instructions, and any other important data.
- 2.2 All non-insulated piping shall be painted continuously in Mechanical Rooms where exposed, and elsewhere throughout project where exposed to view.
- 2.3 All exposed and accessible piping (above removable ceilings, etc) above 1-1/4 inch in diameter shall be identified as to function, zone, and direction of flow by means of an all-temperature adhesive backed vinyl tape. Tape for piping 3 inches and larger shall be 2-1/4 inch high with 2 inch high legend. Tape for smaller than 3 inches shall be 1-1/8 high with 3/4 inch legend. Background colors of tape shall conform to ANSI Standard A-13.1. Piping shall be identified at permanent locations, but in no case at intervals greater than 15 feet.
- 2.4 All valves shall be identified with brass tags of .051 inch thickness, 1 inch by 3 inches or larger, with 1/8 inch high stamped letters. The tag shall be attached to valves with rustproof stainless steel key chains. Valve tags shall have wording such as "Heating Water Supply" so show the function of the valve.
- 2.5 Ductwork shall be identified at or near the fan with stenciled signs or by engraved laminated plastic signs secured by rustproof screws. Sign shall show area served.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Complete all piping insulation and painting prior to application of tags and labels.

3.2 COLOR CODING

- A. Pipe identification tape shall be as noted below:

PIPING TYPE	LABEL COLOR	COLOR CODING	
		LEGEND TEXT	TEXT COLOR
Domestic Cold Water	Green	"Cold Water"	Black
Domestic Hot Water	Yellow	"Dom. Hot Water"	Black
Domestic Hot Water Return	Yellow	"Dom. Hot Water Return"	Black
Sanitary Drainage	Green	"Sanitary Sewer"	Black
Roof Drain	Green	"Roof Drain"	Black
Condensate Drainage	Green	"Condensate Drainage"	Black
Natural Gas	Yellow	"Natural Gas"	Black

END OF SECTION 23 05 53

SECTION 23 05 93 - TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete all testing, adjusting and balancing of supply, return and exhaust air system.

1.2 REFERENCES

- A. AABC - Associated Air Balance Council.
- B. NEBB - National Environmental Balancing Bureau.

1.3 QUALITY ASSURANCE

- A. Testing, Adjusting and Balancing: Follow methodology and procedures of AABC or NEBB.
- B. Report: Record and Format data in conformance with guidelines of AABC or NEBB.

1.4 SUBMITTALS

- A. Submit test reports including identification and types of instruments used.

PART 2 - PRODUCTS

2.1 PROVIDERS

- A. Services shall be provided by one of the following acceptable providers:
 - 1. Fulton Air Balance.
 - 2. Midwest Balance and Service, Inc.
 - 3. Thermal Balance, Inc.
 - 4. Total Balance, Inc.

PART 3 - EXECUTION

3.1 AIR SYSTEM PROCEDURES

- A. Adjust all furnaces and exhaust fans to provide the required design air quantity to or through, each component, including supply air, return air, ventilation air and exhaust air with minimum fan energy requirements.
- B. Use volume dampers at branch runout connections to mains to adjust flows. Avoid using volume dampers at diffuser or register.
- C. Make final measurements of air quantity after the air terminal has been adjusted for optimum flow.

3.2 AIR SYSTEM DATA

- A. Report shall include for each fan:
 - 1. Manufacturer and model.
 - 2. Size.
 - 3. Motor HP, voltage, phase, cycles and full load amps.
 - 4. Location and local identification data.
 - 5. Measured CFM.
 - 6. Measured inlet and outlet static pressures.
 - 7. Measured RPM.
 - 8. Motor operating BHP.
 - 9. Motor operating K W.
- B. Report shall include for each diffuser, grille and register:
 - 1. Size, type and manufacturer.
 - 2. Location and area on drawing.
 - 3. Design CFM.
 - 4. Final measured CFM.

END OF SECTION 23 05 93

SECTION 23 11 23 - GAS PIPING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to complete the following work indicated, noted and detailed on the drawings and specified herein:
 - 1. Pipe and pipe fittings.
 - 2. Valves.
 - 3. Hangers and Supports.
 - 4. Connection of gas piping to equipment.

1.2 REFERENCES

- A. ANSI A13. 1-81 - Scheme for the Identification of Piping Systems.
- B. ANSI B16.3-77 - Malleable Iron Threaded Fittings, Class 150 and 300.
- C. ANSI B.1639-77 - Malleable Iron Threaded Pipe Union, Class 150, 250 and 300.
- D. ANSI A53-84 - Pipe, Steel, Black and Hot Dipped Zinc-Coated Welded and Seamless.
- E. ASTM A120-84 - Pipe, Steel, Black and Hot Dipped Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary Uses.
- F. Manufacturers Standardization Society of the Valves and Fittings Industry (MSS) SP 58-83 – Pipe Hangers and Supports Materials, Design and Manufacturer.
- G. Manufacturers Standardization Society of the Valves and Fittings Industry (MSS) SP 69-83 – Pipe Hangers and Supports Selection and Application.
- H. NFPA 54-84 - National Fuel Gas Code.

1.3 REGULATORY REQUIREMENTS

- A. Conform to local applicable gas Code.

1.4 SUBMITTALS

- A. Submit product data on pipe materials, pipe fittings, valves and accessories.

PART 2 - PRODUCTS

2.1 GAS PIPING, ABOVE GROUND

- A. Pipe: Black steel per ASTM A53 or A120, schedule 40, threaded ends for size 2 inches and smaller.
 - 1. Fittings: ANSI B16.3, Black malleable iron.
 - 2. Unions: ANSI B16.39, Black malleable iron.

2.2 SHUT-OFF VALVES, 2 INCHES AND SMALLER

- A. Bronze body ball valve per ANSI B16.33, full port pattern, reinforced PTFE seals, threaded ends, PTFE seat.
- B. Bronze body plug valve per ANSI B16.33, straightaway, taper plug, regular pattern with a port opening at least equal to the internal pipe area or round port full bore pattern, non lubricated, teflon packing, flat or square head stem with lever operator, 125 psig WOG rating, threaded ends.

2.3 HANGERS AND SUPPORTS

- A. MSS SP 58, types as required by MSS SP 69.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install gas piping and connect piping to equipment in accordance with applicable local gas Code and NFPA-54.
- B. Clean inside of pipe and fittings before installation. Blow lines clear using 80 to 100 psig clean dry compressed air. Rap sharply along entire pipe length before blowing clear. Cap or plug pipe ends to maintain cleanliness throughout installation.
- C. Piping:
 - 1. Cut pipe accurately to actual dimensions and assemble to preclude residual stress.
 - 2. Run piping parallel to structure lines.
- D. Identification of Piping:
 - 1. Identify piping in accordance with ANSI A13.1, using adhesive backed or snap on plastic labels and arrows.
 - 2. In lieu of labels, identification tags may be used with permission of Architect/Engineer.

- E. Hangers and Supports: Selection, fabrication and installation of piping hangers and supports shall conform with MSS SP 69, except that spacing of the hangers and supports shall comply with schedule below.

MAXIMUM SPAN FOR PIPE

DIAMETER INCHES	SPACING OF SUPPORTS (FT)
1/2	5'-0"
3/4	5'-9"
1	6'-6"
1-1/4	7'-6"
1-1/2	7'-6"
2	8'-6"
2-1/2 or larger	9'-0"

- F. Pressure Tests: Test gas piping in conformance with local gas Code.

PART 4 - SUBMITTAL CHECK LIST

- A. Product Literature

END OF SECTION 23 11 23

SECTION 26 01 00.01 - SUMMARY OF ELECTRICAL WORK

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish and install a complete electrical system, as specified and shown on drawings.
- B. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on the drawings and/or herein, including all labor, materials, equipment and incidentals necessary and required for their completion.
- C. All work shall be installed as per drawings, specifications and electrical code. Where one contradicts the other the greater shall be used.
- D. Coordination required for submittals of electrical and lighting utility incentives and rebates.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All materials shall be new and bear the manufacturer's name, trade name and UL label in every case where a standard has been established for the particular material. The materials to be furnished under each section of the specifications shall be the manufacturer's latest approved design.
- B. Materials shall be delivered to the site and stored in original containers and be readily accessible for inspection by the Architect/Engineer until installed.
- C. Materials of the same general type shall be of the same make throughout the project to provide a uniform appearance, operation and maintenance.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All work performed under this section must be done by workmen skilled in their respective trades. All work must present an appearance typical of the best trade practices. Any work not installed in this manner shall be repaired, removed and replaced or otherwise remedied as directed by the Architect/Engineer.
- B. Manufacturer's direction shall be followed completely in the delivery, storage, protection and installation of all equipment and materials. The Contractor shall promptly notify the Architect/Engineer, in writing, of any conflict between any requirement of the Contract Documents and the manufacturer's directions or such written instructions from the Architect/Engineer, before proceeding with the work.

- C. All work and equipment installed under Division 26 work shall be supported, plumbed, rigid and true to line. All Architectural, Structural, Mechanical, Electrical and Fire Protection drawings, shop drawings and catalog data, shall be studied thoroughly, to determine how equipment, fixtures and conduit, etc., are to be supported, mounted or suspended, and shall provide extra steel bolts, inserts, brackets and accessories for proper support whether or not show on the drawings. When directed, drawings shall be submitted showing supports for approval.

3.02 MISCELLANEOUS STEEL

- A. Provide all necessary miscellaneous steel angles, channels, rods, etc., for hanging, mounting or suspending equipment, fixtures, devices, etc., installed under Division 26 work.
- B. Supports installed under Division 26 work shall be suitably fastened to building structural members in a manner approved by Architect/Engineer

3.03 SPECIAL SEALS

- A. After conduits and tubing are installed, the spaces around conduits shall be sealed.
- B. Sealing of all spaces created for the electrical systems shall be in accordance with the requirements of the fire inspector and governing codes.

3.04 UTILITY INCENTIVES AND REBATES

- A. Coordinate materials to and through the Architect as required by utility companies for submission of incentives and rebates.
- B. Provide all paperwork as requested by the Architect for this purpose on behalf of the Owner.
 - 1. Product submittals and cutsheets of all installed materials and items.
 - 2. Invoices including information such as; make/model, quantities, unit prices, total costs, etc.
 - 3. Contractor shall sign all required forms as necessary for completion of the submission.
 - 4. Submittal will be coordinated through and submitted by the Architect on behalf of the Owner.
- C. Contractor may be required to coordinate timing for ordering of materials and products to correspond to time requirements by the utility granting incentive or rebate. Some products may require granting of the incentive and rebate prior to ordering of materials. This may result in ordering of materials in multiple packages and at differing times for multiple deliveries. Contractor is to coordinate these requirements as communicated by the Architect.
- D. Payment of all incentives and rebates will be made to the Owner, not the Contractor.

END OF SECTION 26 01 00.01

SECTION 26 01 00.02 - ELECTRICAL COORDINATION

PART 1 - GENERAL

1.01 COORDINATION

- A. The Contractor is responsible for the proper coordination of the work specified herein.
- B. Any apparatus, appliance, material or work not shown on the drawings, but mentioned in the specifications or vice versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, even if not particularly specified, shall be furnished, delivered and installed under Division 26 work.
- C. Minor adjustments in location of conduit, boxes, and/or equipment shall be made at no additional charge if so, directed prior to their installation. Where offsets in conduits, additional fittings, necessary junction boxes, pull boxes, devices, etc., are required to complete the installation, to clear obstructions or the work of other trades, or for the proper operation of the system, these shall be deemed to be included in the Contract and shall be furnished and installed complete under Division 26 work.
- D. The Contractor shall exchange complete original and revised drawings, details, information, etc., such that all installations are properly coordinated and fit together into a complete and acceptable project.
- E. Where Division 26 work will be installed in proximity to other work or where there is evidence that the Division 26 work will interfere with other work the contractor shall assist in working out space conditions to make a satisfactory adjustment. If so, directed by Architect/Engineer, the contractor shall prepare composite working drawings and sections at a suitable scale not less than 1/4 inch - 1'-0", clearly showing how work is to be installed in relation to other work. If Division 26 work is installed before coordinating with other work, or so to cause interferences with other work, the contractor shall make necessary changes in the work to correct the condition.
- F. The contractor shall arrange for all chases in walls, slots in beams, openings in floor or roof, etc., required for the installation of pipes, ducts, conduits, etc., and be held responsible for the proper location of chases required for the work. The contractor shall further be responsible for having work that is required to be built in, on hand in time for proper progress.
- G. The contractor shall make all measurements in the field and shall be responsible for correct fittings. The contractor shall coordinate this work with all other divisions in such a manner as to cause a minimum of conflict or delay. Division 26 work shall be coordinated in advance with other work and report immediately any difficulty which can be anticipated before installing work in question.
- H. The contractor shall coordinate with other work for proper location of roughing-in an connection to equipment.
- I. Refer to Architectural, Structural, Mechanical Drawings and Specifications for construction features, floor and ceiling elevations, finishes, grade elevations, work in other divisions, size and location of pipe chases and head room for same, location of walls, partitions, beams, etc., swing of doors, switches and electrical outlets and the order and time of placement of all work. No work to proceed until all details affecting or affected by these conditions have been completely developed and properly resolved.

1.02 VISIT THE PREMISES

- A. The contractor is directed to visit the premises and become thoroughly familiar with the general layout of the building site and the location of the present utility lines to which connection will be made before submitting a proposal.
- B. The contractor shall also check present grades, ditches, pavements, sewers and/or any other conditions affecting the installation of electrical ducts and utilities under the Contract.
- C. Offsets which may be required to leave new work clear, etc., will be included in the proposal, and the contractor assumes full responsibility for having made a proper and thorough investigation of these requirements.
- D. The Contract is based upon the assumption that the contractor has investigated, understands and accepts all existing conditions.
- E. While all existing storm sewers, sanitary sewers, water mains, gas mains, power lines, telephone lines and other utility services, and/or installations, both underground and overhead, may not have been indicated on the drawings, the contractor will be held expressly responsible for determining the exact location of all such service lines and/or installations encountered in the performance of the Contract and for the provision of suitable protection, support and maintenance.

1.03 SPACE REQUIREMENT

- A. It shall be the responsibility of the contractor to ensure that items to be furnished fit the space available, with proper provisions for access to equipment for maintenance and replacement. The contractor shall make necessary field measurements to ascertain space requirements, including those for connections, and removal of parts, and shall furnish and install such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the drawings and specifications.
- B. All installations shall be made to maintain maximum headroom and clearance around equipment. When space and/or headroom appear inadequate, Contractor shall notify Architect/Engineer prior to proceeding with the installation.
- C. All equipment which must be serviced, operated or maintained shall be located in fully accessible positions. Minor deviations from the contract drawings may be made to allow for better accessibility, but changes of magnitude or which involve extra cost shall not be made without prior approval.
- D. The contractor is responsible to determine that the equipment and appliances which are furnished can be brought into the building. No extra compensation will be allowed for dismantling of equipment to install in the available space or to obtain entrance into the building.
- E. Where equipment that has been approved requires different arrangement or connections from those shown, it shall be the responsibility of the contractor to install the equipment to operate properly and in harmony with the intent of the drawings and specifications. When directed by the Architect/Engineer, the contractor shall submit drawings showing the proposed installation. If the proposed installation is approved, the contractor shall make all incidental changes in conduits, supports, wiring, heaters, panelboards, etc.

- F. The contractor shall provide any additional devices, fittings, and other additional equipment required for the proper operation of the system resulting from the selection of equipment, including all required changes in affected trades. The contractor shall be responsible for the proper location of roughing in and connections by other trades.

1.04 MATERIAL STORAGE

- A. All materials shall be stored in a manner that does not interfere with the progress of work. All items shall be stored in dry spaces.
- B. Materials stored within buildings as approved by the Architect/Engineer shall be distributed in such a manner as to avoid overloading of the structural frame, and never shall be concentrated in such a manner as to exceed the equivalent of fifty (50) pounds per square foot uniformly distributed loading.

END OF SECTION 26 01 00.02

SECTION 26 01 00.03 - CODES, FEES AND STANDARDS

PART 1 - GENERAL

1.01 CODES AND FEES

- A. Unless specifically notes to the contrary, the Contractor shall furnish all equipment materials, labor and install and test in accordance with applicable sections of latest revisions published at date of bid of the following:
1. American Concrete Institute (ACI).
 2. American National Standards Institute (ANSI).
 3. American Society for Testing and Materials (ASTM).
 4. American Institute of Steel Construction (AISC).
 5. Aluminum Association (AA).
 6. National Board of Fire Underwriters (NBFU).
 7. Underwriters Laboratories Inc. (UL).
 8. American Iron and Steel Institutes (AISI).
 9. Institute of Electrical and Electronics Engineers (IEEE).
 10. National Electrical Manufacturers Association (NEMA).
 11. Insulated Cable Engineers Association (ICEA).
 12. National Electrical Safety Code (NESC).
 13. Edison Electric Institute (EEI).
 14. National Electric Code (NEC).
 15. Illuminating Engineering Society (IES).
 16. National Bureau of Standards (NBS).
 17. American Welding Society (AWS).
 18. Association of Edison Illumination Companies (AEIC).
 19. Uniform Building Code (UBC).
 20. American Association of State Highway and Transportation Officials (AASHTO).
 21. Environmental Protection Agency (EPA).
 22. Occupational Safety and Health Act (OSHA).
 23. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).
 24. Lighting Protection Institute (LPI) Standard of Practice.
 25. Life Safety Code (LSC).
 26. Local State Fire Marshall's Office (SFM).
 27. National Fire Protection Association (NFPA).
- B. The provisions, rules, regulations and ordinances listed above are to be considered as much a part of these specifications as if repeated herein or attached hereto. All changes or modifications required to conform to such codes, regulations or requirements must be approved by the Architect/Engineer.
- C. The Contractor shall comply with applicable laws, building and construction codes and applicable regulations of governing local, County, State and other applicable codes, including the Utility company. Obtain permits and inspections from authorities having jurisdiction, and pay required charges. Deliver certificates of inspection to the Architect at time of acceptance inspection.

1.02 STANDARDS

- A. All materials shall be new, free of defects and shall be U.L. listed, bear the U.L. Label or be labeled or listed with and approved, nationally recognized Electrical Testing Agency. Where no labeling or listing service is available for certain types of equipment, test data shall be submitted to prove to the Engineer that equipment meets or exceeds available standards.

1.03 UTILITY COMPANY FEES, CHARGES, COSTS

- A. It is the contractor's responsibility to contact the appropriate Electric and Telephone Utility Companies to determine if any fees, charges or costs will be due to the Utility Company, as required by the Utility Company for temporary power, In/Out installations, hook-ups, surveying of easements, etc. This fee, charge or cost shall be included in the contractor's bid price.

END OF SECTION 26 01 00.03

SECTION 26 01 00.04 - BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SCOPE

- A. The work shall include the furnishings of systems as defined in Section 26 01 00.01 "Work Included".
- B. Drawings for the work are diagrammatic, intended to convey the Scope of the Work and to indicate the general arrangement and locations of the work. Because of the scale of the drawings, certain basic items such as conduit fittings, access panels, sleeves, pull and junction boxes may not be shown. Where such items are required by Code or by other sections, such items shall be included.
- C. Equipment Specification may not deal individually with minute items such as components, parts, controls and devices which may be required to produce the equipment performance specified or as required to meet the equipment warranties. Where such items are required, they shall be included by the supplier of the equipment, whether or not specifically indicated.
- D. Coordinate with all trades in submittal of shop drawings. Shop drawings shall detail space conditions to the satisfaction of all concerned trades, subject to review and final acceptance by the Architect. In the event that the Contractor installs work before coordinating with other trades or so as to cause any interference with work of other trades, the necessary changes shall be made in the work to correct the condition, at no additional cost to the Owner.

1.02 TEMPORARY POWER AND LIGHTING

- A. Furnish, install and maintain temporary power with ground fault protection and lighting to be used by all trades during construction. See Section 26 01 00.03 for In/Out fees. The entire system shall be grounded. Payment for monthly current consumption shall be the responsibility of the Contractor. Thermal magnetic breakers or cartridges fuses only shall be used for over current protection.

1.03 SUPERVISION OF THE WORK

- A. Provide field superintendent who has had a minimum of four (4) years previous successful experience on projects of comparable sizes and complexity. Superintendent shall be present at all times that work under this Division is being installed or affected. Superintendent shall be a licensed Journeyman.

1.04 ELECTRICAL CONNECTIONS

- A. All connections shall be tightened to the torque values recommended by that device manufacturers instructions. If these values are not listed, tighten to pound-inch or pound-foot values recommended in UL Standard 486B, a summary of which may be found in the National Electric Code Handbook.

1.05 ACTIVE SERVICES

- A. Existing active services; water, gas, sewer, cable, fiber electric, when encountered, shall be protected against damage. Do not prevent or disturb operation of active services which are to remain. If active services are encountered which require relocation, make request to authorities with jurisdiction or determination of procedures. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the utility or Municipality having jurisdiction.

1.06 TESTS

- A. Systems shall be tested by the Contractor and placed in proper working order prior to demonstrating systems to Owner.
- B. After work is completed, a load balance test shall be made for each panelboard to demonstrate that with full lighting and mechanical load, the balance between phases is within 10%. Unbalanced beyond this limit shall be corrected, maintaining proper phase relation to neutral at all times. Submit to Engineer, prior to request for final inspection, a written report of existing and final load information.

1.07 DEMONSTRATIONS

- A. Prior to acceptance of the work, the Contractor shall demonstrate to the Owner, or his designated representative, all features and functions of all systems and shall instruct the Owner in the proper operation of the systems. Each system shall be demonstrated once.
- B. The demonstration shall consist of not less than the following:
 - 1. Point out the actual location of each component of a system and demonstrate its function and its relationship to other components within the system.
 - 2. Demonstrate the electrical system by actual "start-stop" operation showing how to work controls, how to reset protective devices, how to replace fuses, and what to do in an emergency.
 - 3. Demonstrate communication, signal, alarm and detection systems by actual operation of the systems and show how to reset signal, alarm and detection devices.
- C. Systems to be demonstrated shall include but not be limited to the following:
 - 1. Service and power distribution systems.
 - 2. Lighting and lighting control systems.
 - 3. Emergency lighting systems.
 - 4. Motor and equipment control.
 - 9. HVAC time control system.
- D. Contractor shall furnish the necessary trained personnel to perform the demonstrations and instructions, and if necessary, shall arrange to have the manufacturer's representatives present to assist with the demonstrations. The Contractor shall allow one (1) day for performing prescribed demonstrations.
- E. The Contractor shall arrange with the Owner the dates and times for performing each demonstration.

1.08 IDENTIFICATION

- A. The Contractor shall provide identification for wiring systems and equipment.
- B. Lettering for identification of fire alarm, telephone, TV, security, P.A. etc., shall be of sign painters quality or stencil lettering. Paint shall be fast drying sign enamel. All major pull and junction boxes for these systems except fire alarm in service areas, tunnels, above accessible ceilings and in accessible chases shall have one-half inch high black lettering identifying the system. Fire alarm shall have red lettering. Example: Fire Alarm = FA, Security = SCTY, Telephone = TEL.
- C. Power and lighting circuits shall have conductors color banded, per 26 05 19 Wire and Cable in each junction and pull box.
- D. Nameplates:
 - 1. The following, but not limited to, items shall be equipped with nameplates: All motor starters, push-button stations, control panels, time switches, disconnect switches, panel boards, contractors or relays in separate enclosures, power receptacles where the nominal voltage between any pair or contracts is greater than 150V, all switches controlling outlets or equipment where the outlets are not located within sight of the controlling switch, high voltage boxes and cabinets. Special electrical systems shall be identified at terminal cabinets and equipment racks.
 - 2. Power panels, motor control centers and switchgear without doors, shall have circuit breakers and switches identified by engraved plastic tags affixed to cabinet adjacent to device.
 - 3. Nameplates shall adequately describe the function of the particular equipment involved. Where nameplates are detailed on the drawings, inscription and size of letters shall be as shown on the shop drawings submitted for approval. Nameplates for panelboards, motor control centers and switchboards shall include the panel designation, voltage and phase of the supply. For example, "Panel PA, 120/208V, 3-phase, 4-wire". The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and P.B. station nameplates for that machine.
 - 4. Nameplates shall be laminated phenolic plastic, black front and back with white core, with lettering etched through the outer covering. Attach with plated self-tapping screws or small brass screws in un-air-conditioned spaces. Nameplates to identify emergency devices shall be red laminate.
- E. Panelboards shall have type-written circuit directories installed inside the doors under transparent plastic covers.

1.09 SUBMITTALS

- A. Method of preparing and procedure for submitting Shop Drawings and submittal data shall be in compliance with the general section of these specifications.
- B. Submittal data for electrical equipment shall consist of Shop Drawings and/or catalog cuts showing technical data necessary to evaluate the material or equipment, to include dimensions, wiring diagrams, performance curves, ratings, control sequence and other descriptive data necessary to describe fully the item proposed and its operating characteristics. Any submittal data in following electrical sections, peculiar to that section, is in addition to submittal requirements of this section.

1.10 EXCAVATING, TRENCHING AND BACKFILLING

- A. The contractor shall do excavating necessary for underground wiring, conduit and shall backfill trenches and excavations with sand after work has been inspected. Care shall be taken in excavating that walls and footings and adjacent load bearing soils are not disturbed in any way, except where lines must cross under a wall footing. Where a line must pass under a footing, the crossing shall be made by the smallest possible trench to accommodate the conduit. Excavation shall be kept free from water by pumping if necessary. No greater length of trench shall be left open, in advance of conduit laying, than that which is required.
- B. Roots shall be removed to a minimum level of eighteen (18) inches below finish grade. No roots shall be allowed to remain under any installed electrical work.
- C. Backfill about the structures shall be placed, when practical, as the work of construction progresses. Backfilling on or against concrete work shall be done only when directed. Backfilling of duct lines shall progress as rapidly as the testing and acceptance of the finished sections of the work will permit and shall be carried to a crown approximately six (6) inches above the existing grades. In backfilling around duct lines, selected material shall be compacted firmly around and to a depth of not less than six (6) inches over the top of the duct. Fill and backfill and rough gradings shall be compacted thoroughly in layers and shall be brought up to within six (6) inches of finished grades. Fill and backfill shall be clean and free from vegetable matter and refuse.

1.11 CUTTING AND PATCHING

- A. Cut existing walls, floors, ceilings, roofs, etc. necessary for the proper installation of new materials, equipment and related electrical items. Provide all necessary framing, lintels, hangers, etc. to maintain the structural integrity of the building system after cutting.
- B. Contractor is responsible for cost to restore or patch adjacent surfaces to original condition. Employ proper professional trade for patching and finishing exposed surfaces.

END OF SECTION 26 01 00.04

SECTION 26 01 00.05 - CONCRETE WORK AND ACCESS PANELS

PART 1 - PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide all access doors and panels for any and all concealed devices installed under Division 26.
- B. Access doors shall be provided for, but not be limited to junction boxes, pull boxes, etc., in otherwise inaccessible locations.
- C. Provide concrete equipment bases under all electrical equipment mounted on ground, installed under Division 26, unless otherwise indicated.
- D. Provide a minimum of 3-inch concrete encasement for underground main service feeder conduits except where conduits are run under floor slab. Maintain minimum of 3 inches between conduits where several conduits occur in the same trench.
- E. Provide concrete bases for ground-mounted area lighting units.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Access panels shall be of sufficient size for the service intended or required or as indicated on the drawings.
- B. Minimum size shall be 12 inches x 12 inches.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Items installed above acoustical lay-in tile ceilings shall not require access doors.
- B. Provide wood boxes or frames for access panels located in plaster or ceramic tile walls. Boxes shall have proper anchoring devices and shall be installed after tile or plaster work has been completed.
- C. Housekeeping Pads:
 - 1. Provide concrete housekeeping bases under all electrical equipment mounted on the floor or ground, installed under Division 26.
 - 2. Establish sizes and location of the various concrete bases required and provide all necessary anchor bolts together with templates for holding these bolts in position.

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3. Each concrete base shall be no less than 4 inches high and project 3 inches on all sides beyond the equipment.

END OF SECTION 26 01 00.05

SECTION 26 05 19 - WIRE AND CABLE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The other Contract Documents complement the requirements of this Section. The General Conditions apply to the work of this Section.

1.02 SCOPE

- A. Furnish materials, tools, labor and supervision necessary to install wiring systems.

1.03 STANDARDS AND CODES

- A. Methods of installation shall comply with the provisions of applicable Sections of NEC, Article 300.
- B. Materials shall be in accordance with NEC, Article 310 and shall be UL listed for application intended.

1.04 DESCRIPTION

- A. This Section describes the basic materials and methods of installation for general wiring systems of 600 volts and less. Wiring for a higher voltage rating, if required, shall be specified in another Section or as required.
- B. Minimum size conductors shall be No. 12 AWG for power circuits, No. 14 AWG for control wiring and 20 AWG shielded for communication and sensor wiring.

1.05 QUALIFICATIONS

- A. The material used for the wiring systems shall be the products of a manufacturer regularly engaged in the manufacturing of the specified material. Where a manufacturer is named for a particular material, the materials of other manufacturers will be acceptable provided the material meets requirement of the specifications.

PART 2 - PRODUCTS

2.01 WIRE AND CABLE

- A. Wire and cable for power, control and signal circuits shall have copper conductors of not less than 98% conductivity and shall be insulated to 600V except as noted below. Power conductor sizes No. 10 and 12 AWG shall be solid or stranded. Aluminum wire is not permitted.

B. Type of wire and cable for the various application shall be as follows:

1. Type THW, THWN or XHHW (75°C): Use for branch circuits, and equipment power feeders in wet and dry locations, No. 12 AWG minimum.
2. Type RHH, THHN or XHHW (90°C): Use for branch circuits, and equipment power feeders in dry locations only, No. 12 AWG minimum.

2.02 CONDUCTOR COLOR CODING

A. Wiring systems shall be color coded. Conductor insulation shall be colored in sizes up through No. 8 AWG, conductors No. 6 AWG and larger shall have black insulation and shall be phase color coded with one-half inch band of colored tape at all junctions and terminations. Colors shall be assigned to each conductor as described below and carried throughout all main and branch circuit distribution.

CONDUCTOR	120/208 Volt	277/480 Volt
1. Phase >A= conductor	Black	Brown
2. Phase >B= conductor	Red	Orange
3. Phase >C= conductor	Blue	Yellow
4. Neutral conductor	White	Grey
5. Grounding conductor	Green	Green

2.03 CONNECTORS - POWER WIRING

- A. In-line splices and taps for conductor sizes No. 8 AWG and smaller; use 3M Co. Scotchloc vinyl insulated spring connectors, or equivalent.
- B. Insulate splices and taps to thickness of conductor insulation with half-lapped of 3M Scotch brand No. 33 vinyl electrical tape. Connectors having irregular surfaces; fill voids and smooth contours with 3M Scotchfil electrical putty prior to tapping.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Wire shall not be installed in the conduit system until the building is enclosed and wet work completed.
- B. Conduit shall be swabbed free of moisture and debris prior to pulling in wire.

3.02 INSTALLATION

- A. Splices in branch circuit wires shall be made only in accessible junction boxes.
- B. Power cable shall be pulled with the use of approved pulling compound for long runs.

END OF SECTION 26 05 19

SECTION 26 05 26 - GROUNDING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The other Contract Document complement the requirements of this Section. The General Conditions apply to the work of this Section.

1.02 SCOPE

- A. This section deals with the grounding of service equipment, transformers, non-current carrying conductive surfaces of equipment, metal buildings, structures and other equipment.

1.03 STANDARDS AND CODES

- A. All grounding connections shall be installed in accordance with the National Electrical Code and applicable local code requirements. Such codes shall be considered minimum requirements, and the installation of the grounding system shall insure freedom from dangerous shock exposure and shall provide a low impedance ground fault path to permit operation of overcurrent and ground fault protective devices.
 - 1. NEC Article 250
 - 2. National Electrical Safety Code.

1.04 QUALIFICATIONS

- A. Use Thomas and Betts compression ground system, exothermic welds or an approved listed compression type system.

PART 2 - PRODUCTS

2.01 CONDUCTORS

- A. All grounding conductors, whether insulated or not shall be copper.

2.02 GROUND RODS

- A. All ground rods shall be copper clad steel, 3/4 inch by 10 feet solid type.

2.03 GROUND CONNECTIONS

- A. The connection of a grounding conductor to ground rods or ground conductor to ground conductor shall be by means of Thomas & Betts compression ground system, or exothermic weld.
- B. Ground connections to building steel or equipment shall be bolted using T & B compression type lugs.
- C. Slab penetrations of ground conductors shall terminate on T & B compression type flush plate connectors installed flush in slab. Interior connections of flush plate connectors shall be made using compression lugs.
- D. Grounding conductor connections at conduit terminations shall be made by approved listed grounding bushings.

PART 3 - EXECUTION

3.01 MAIN SERVICE GROUND

- A. In accordance with NEC Article 250, each of the following shall be bonded together to form the grounding electrode system:
 - 1. Metal underground water pipe in direct contact with the earth for 10 feet or more (provide jumpers around water meter).
 - 2. Metal frame of the building where effectively grounded.
 - 3. Concrete-encased electrode consisting of a minimum of 20 feet of No. 3/0 AWG bare copper in the footing.
 - 4. Counterpoise (Ground Ring) for lightning protection system (if lightning protection is installed).
- B. This grounding system shall be supplemented by three copper clad steel ground rods 3/4 inches in diameter by 10 feet long. The ground rods shall be driven a distance of 10 feet apart.
- C. The grounding electrode system shall be connected to the grounded circuit conductor (neutral) on the supply side of the service disconnecting means by a grounding electrode conductor. The grounding electrode conductor will be sized as shown in Table 250 of the National Electrical Code.

3.02 FEEDER AND BRANCH CIRCUITS

- A. All feeders and branch circuits shall have installed in the same raceway as the circuit conductors, an insulated copper grounding conductor sized in accordance with Table 250 of the National Electrical Code unless such a grounding conductor is shown to be larger on the plans or specified to be larger elsewhere in the specifications.

3.03 EXPOSED NON-CURRENT CARRYING CONDUCTIVE SURFACES

- A. All exposed non-current carrying conductive surfaces of electrical equipment shall be grounded to the equipment conductor run with the circuit conductors or a separate ground as shown on the drawings.

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END OF SECTION 26 05 26

SECTION 26 05 33.13 - CONDUIT SYSTEMS

PART 1 - GENERAL

1.01 SCOPE

- A. Furnish materials, tools, labor and supervision necessary to fabricate and install a complete electrical conduit system.
- B. Conduit systems shall be provided for all wiring systems, except where the Drawings or other Sections of the Specifications indicate that certain wiring may be installed without conduit.

1.02 STANDARDS AND CODES

- A. Methods of fabrication and installation shall copy with the provisions of all applicable Sections of the NEC.
- B. Materials shall be UL and NEC approved for the application intended.

1.03 DESCRIPTION

- A. This section describes the basic materials and methods of installation for conduit systems.

1.04 QUALIFICATIONS

- A. The materials used in the fabrication of the conduit system shall be products of a manufacturer regularly engaged in the manufacturing of the specified material. Where a manufacturer is named for a particular material, the material of other manufacturers shall be acceptable provided the materials meets requirements of the Specification.

PART 2 - PRODUCTS

2.01 CONDUIT

- A. Rigid Conduit: Full weight, threaded, rigid steel conduit, galvanized inside and out by hot dip or electrogalvanizing process. Additional protection by electrostatically applied baked coating. Thread protective caps and couplings shall remain in place prior to use. Rigid conduit to be used for exposed exterior installations, where subject to physical abuse and required by Code.

- B. Electrical Metallic Tubing (EMT):

Thinwall, electrically welded cold rolled steel conduit, galvanized inside and out by electrogalvanized process. Use for conduit installed in stud walls, masonry walls, above suspended ceilings and were exposed in interior spaces not subject to physical abuse.

C. Flexible Metal Conduit:

Formed at one continuous length of spirally wound electrogalvanized steel strip. Use for final connections to any equipment subject to movement or vibration. Connections to fixtures shall be limited to 6 feet in length. All other connections shall be a maximum of 1'-6" in length.

D. Liquidtight Flexible Metal Conduit:

Formed of one continuous length of spirally wound steel strip, with water and oil tight neoprene jacket. Use for final connections to equipment listed in paragraph C above when located in wet or damp areas.

E. PVC Conduit:

Conduit shall be sunlight resistant, schedule 40, 90°C. Conduit shall be composed of polyvinyl chloride and shall conform to NEMA Standards. Conduit, fittings and cement shall be produced by the same manufacturer. May be used where buried outside building, encased in concrete, or below slabs on grade. Electrical non-metallic tubing and rigid non-metallic conduit shall not be used below grade within the building. PVC conduit shall be installed in concealed location only.

F. Type MC cable:

1. May be used as approved by Code.
2. Factory assembly of one or more insulated conductors enclosed in a metallic interlocking tape.
3. Install all MC cable in a neat fashion. All unacceptable MC cable installation shall be removed and replaced at the Architect's discretion. MC cable shall run with buildings member and strapped as per NEC330.
4. Do not install MC cable in or on masonry walls.
5. All MC cable shall be concealed.

G. Electrical non-metallic tubing and rigid non-metallic conduit shall not be used within the building.

2.02 CONDUIT FITTINGS

A. Rigid Conduit Fittings:

Threaded, galvanized malleable iron or heavy steel, water and concrete tight. Grounding type nylon insulated bushings for connectors at cabinets, boxes and gutters.

B. Metallic Tubing Fittings:

Set screw type steel, except in wet or concrete tight applications. For wet or concrete tight applications, use compression type galvanized steel. Use connectors with nylon insulated throats at cabinets, boxes and gutters. Indenter type and malleable iron fittings will not be allowed.

C. Flexible Metal Conduit Fittings:

Squeeze or screw type galvanized steel with nylon insulated throats.

D. Liquidtight Flexible Conduit Fittings:

Galvanized steel, with watertight gaskets, O-ring and retainer, and nylon insulated throats.

E. Conduit Fittings:

Exposed conduit fittings shall be Condulet type for sharp turns, tees, etc.

2.03 OUTLET BOXES

A. Material, size and installation for outlet boxes shall comply with NEC. Article 370.

B. Boxes shall be Raco, Steel City, Appleton or equivalent.

In general, the type of boxes shall be as follows:

1. In stud walls; For single outlet use 4 inches square by 2-1/8 inches deep box. For ganged outlets use 4-1/2 inches high by 1-5/8 inches deep multiple gang boxes. Boxes to be provide with raised covers of depth as required for thickness of wall materials.
2. In masonry and poured concrete walls; For single outlets requiring two conduit connections in top and/or bottom of box use 4 inches square by 2-1/8 inches deep box with raised square cut cover. For ganged outlets use 3-3/4 inches high by 2-1/2 inches deep multiple gang masonry box.
3. Surface-mounted wall outlets; For single outlet use 2-1/8 inches deep handy box, for double outlets use 4 inches square by 2-1/8 inches deep box. For more than two ganged outlets use 3-3/4 inches x 2-1/2 inches deep multiple gang masonry boxes. Boxes to be provided with 1/2 inch raised cover as required for device.
4. In suspended ceilings; Use 3-1/2 inches deep octagon box with fixture studs and steel mounting bars.
5. Surface outlets installed outdoors or in wet locations; Use Type FS or FD box with weatherproof cover plates for receptacles and switches.

2.04 PULL AND JUNCTION BOXES

- A. Construction, sizes and installation of pull and junction boxes shall comply with NEC, Article 370 and tables 270-6 (a) and (b).
- B. Pull and junction boxes not specifically described in NEC, Article 370, shall be fabricated of heavy gauge galvanized steel with screw covers and enamel finish.
- C. Pull and junction boxes for installation in poured concrete floors shall be flush type, cast iron, with watertight gasketed covers. Boxes for installation in floors with tile or carpet floor covering shall have recessed brass covers and brass carpet flanges to accommodate the floor covering.
- D. Pull and junction boxes for outdoor installations shall be raintight.

2.05 AUXILIARY GUTTERS

- A. Construction, sizes and installation of auxiliary gutters shall comply with NEC, Article 374.

2.06 HANGERS AND SUPPORTS

- A. Provide conduit hanger and support devices of approved type for method of supporting required, to include: structural steel members, suspension rods, conduit clamps, concrete inserts, expansion shields, beam clamps and welding pins. All devices shall have galvanized finish or other approved corrosion resistance finish. All supporting devices shall be manufactured for the purpose. Hangar wire and similar supports shall not be used. In general, hangers and supports shall be as follows:

1. Where single or multiple run of conduit is routed on surface of structure; use conduit clamps mounted on Unistrut channel so as to maintain not less than 1 inch clearance between conduit and structure.
2. Where single run of conduit is suspended from overhead; use split ring conduit clamp suspended by steel drop rod not less than 3/8 inch diameter.
3. Where multiple parallel runs of conduit are suspended from overhead; use split ring conduit clamps uniformly spaced and supported on trapeze hangers fabricated of Unistrut channels, suspended by not less than 1/2 inch steel drop rod.
4. Where conduit is routed in steel stud partitions, use metal stud clips, style as appropriate for application, equivalent to "Caddy" brand.
5. Maximum hanger and support spacing shall be in accordance with NEC. Regardless of listed spacing, provide additional hangers or supports at not more than 2'-0" from each change of direction and at each side of any box or fitting.

- B. Hangers and supports shall be anchored to structure as follows:

1. Hangers and supports anchored to poured concrete; use malleable iron or steel concrete inserts attached to concrete forms.
2. Hangers or supports anchored to structural steel; use beam clamps and/or steel channels as required by structural system.
3. Hangers or supports anchored to metal deck; use spring clips or approved welding pins. Maximum permissible load on each hanger shall not exceed 50 pound.
4. The use of explosive force hammer actuated, booster assist or similar anchoring device will not be permitted.

2.07 SURFACE RACEWAYS (DUAL SERVICE - POWER AND DATA):

- A. Basis of Specification: "Legrand"; Wiremold 2300D Series.

- B. Description:

1. Small capacity, 2-1/4" x 11/16" overall dimension.
2. 2-compartment to separate power from data/low voltage cabling.
3. Non-metallic, PVC surface raceway.
4. Over-the-raceway mount boxes for all components and devices.
5. Corners to have a 2" bend radius in compliance with TIA/EIA 569-A.
6. Provide type of devices, jacks and faceplates as appropriate for all services required.

7. Provide all horizontals, verticals, corners, trims, covers, clips, brackets, caps, plates, fittings, etc. as required for a complete and finished installation.

C. Finish: White.

2.09 SURFACE RACEWAYS (SINGLE SERVICE - POWER OR DATA):

A. Basis of Specification: "Legrand"; Wiremold 2300 Series.

B. Description:

1. Small capacity, 2-1/4" x 11/16" overall dimension.
2. 1-compartment for single type service cabling.
3. Non-metallic, PVC surface raceway.
4. Over-the-raceway mount boxes for all components and devices.
5. Corners to have a 2" bend radius in compliance with TIA/EIA 569-A.
6. Provide type of devices, jacks and faceplates as appropriate for all services required.
7. Provide all horizontals, verticals, corners, trims, covers, clips, brackets, caps, plates, fittings, etc. as required for a complete and finished installation.

C. Finish: White.

PART 3 - EXECUTION

3.01 CONDUIT INSTALLATION

- A. In general, horizontal runs of conduit shall be installed in ceiling spaces. Conduit for convenience outlets, wall-mounted fixtures and other wall outlets shall be routed overhead and dropped through block cells or stud walls to the outlet. Conduit shall not be installed in or below concrete floor slabs except where noted on drawings or required to serve open floor area outlets or equipment.
- B. Generally, conduit shall be concealed, except in shafts, mechanical equipment rooms, and at connections to surface boxes and free standing equipment, and as otherwise noted.
- C. All conduit shall be routed in lines parallel to building lines.
- D. No conduit shall be installed closer than 6 inches to piping installed by other trades.
- E. Minimum size conduit shall be 1/2 inch trade size. Where specific size is not called for on Drawings or in specification, Contractor shall select size required from Chapter 9 of NEC. Where specific sizes required by Drawings or Specifications are larger than Code requires, the larger size shall be installed.
- F. Install the conduit system mechanically and electrically, continuous from outlet and to cabinets, junction or pull boxes, Conduit shall enter and be secured to cabinets and boxes in such a manner that all parts of the system will have electrical continuity.

- G. Install insulated ground wire in all raceways. Size per NEC 250.

3.02 OUTLET BOX INSTALLATION

- A. Outlet boxes shall be installed for, but not limited to, fixtures, switches, receptacles and other devices.
- B. Approximate location of outlets are shown on the plans, but each location as shown shall be checked by the Contractor before installing the outlet box.
- C. Wall boxes installed flush in common wall shall generally not be back-to-back or through-wall types. Where it is necessary to install boxes back-to-back, install sound absorption material between boxes and plug nipple connection with duct seal.
- D. Boxes located on opposite sides of a common wall that are closely connected by conduit shall have the conduit openings plugged with duct seal.
- E. Outlet boxes shall be installed plumb and square with wall face and with front of box or cover located within 1/8 inch of face of finish wall. Boxes in masonry shall be set with bottom or top of box tight to the masonry unit, unless otherwise specified.

3.03 PULL AND JUNCTION BOX AND GUTTER INSTALLATION

- A. Install pull boxes, junction boxes and auxiliary wiring gutters where required by Code and where required to facilitate installation of the wiring. In longer conduit runs, install a pull box for at least each 100 feet of conduit.
- B. For concealed conduit, install boxes flush with ceiling or wall, with covers accessible and easily removable. Where flush boxes are installed in finished ceilings or walls, provide cover which shall exceed the box face dimensions by a sufficient amount to allow no gap between box and finished material.
- C. Boxes shall not be located in finished, occupied rooms, without prior approval of Architect/Engineer.

3.04 HANGER SUPPORT INSTALLATION

- A. Hangers and supports shall be installed for all conduit and boxes. Supports shall be manufactured for the purpose.
- B. Conduit and boxes shall not be attached to or supported from mechanical pipes, plumbing pipes or sheet metal ducts.
- C. Tie wire shall not be used.
- D. Work includes support frames for conduit runs to equipment.

END OF SECTION 26 05 33.13

SECTION 26 05 83 - WIRING FOR EQUIPMENT

PART 1 - GENERAL

1.01 SCOPE

- A. Provide materials, labor and supervision necessary to install electric services for all equipment.
- B. In general, the equipment to be wired shall include but not limit to the following:
 - 1. Mechanical Equipment
 - 2. Equipment furnished by Owner.
 - 3. Other equipment as required.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide services and make final connections for motors and equipment. Make final connections except where notes on drawings state "rough-in only". Where final connections are not to be made, install outlet box, pull in conductors and leave an 8 inch pigtail for each conductor. Conductors shall be taped and appropriate cover plate installed over box.
- B. Furnish safety disconnects for motors and equipment as needed, so as to make service complete to each item of equipment.
- C. Prior to roughing-in conduit, the Contractor shall consult with Equipment suppliers, and shall verify with them the exact locations for rough-ins, and the exact size and characteristics of the services required, and shall obtain from the Equipment Suppliers a schedule of electrical loads for the equipment furnished by them. These schedules shall be used for verifying services, motor starters, disconnects, fuses and overload protection.
- D. Changes required in the work, due to the Contractor's failure to comply with these requirements, shall be made by the Contractor at no additional cost to the Owner.

END OF SECTION 26 05 83

SECTION 26 09 23 – LIGHTING SENSORS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision and services required to provide and complete all lighting sensor work on this Project as indicated, noted, detailed and scheduled on the drawings and specified herein.
- B. Generally includes the following:
 - 1. Wall Switch Sensors.

1.02 QUALITY ASSURANCE

- A. All components shall be U.L Listed.
- B. All components shall meet all applicable requirements of the NEC and State and local Codes.
- C. All components shall be supplied by a single manufacturer that has been continuously involved in manufacture of lighting sensors for a minimum of (5) years.
- D. All components shall offer a minimum (5) year warranty.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's published catalog data, cutsheets, literature, specifications and installation instructions.
 - 2. Indicate any load restrictions when used with electronic ballasts.
- B. Shop Drawings:
 - 1. Submit lighting plans indicating all sensor locations, types, orientations, etc.
 - 2. Submit any interconnection diagrams per major subsystem showing proper wiring required.

PART 2 - PRODUCTS

2.01 WALL SWITCH SENSORS – OCCUPANCY AND VACANCY (DUAL TECHNOLOGY)

- A. Provide one of the following approved products:

1. "Acuity Brands"; Sensorswitch #WSX PDT Series.
2. "Watt Stopper"; #DW-100 Series.
3. "Eaton/Greengate"; #ONW-D Series.

B. Description:

1. Shall provide line-of-sight passive infrared (PIR) detection of small motion in a 180-degree semi-circular pattern for detection of mobile occupants within the space and combine overlapping ultrasonic microphonics coverage for detection of occupants within the space either idle or located behind obstructions.
2. Capable for either 120 volt or 277 volt power.
3. Wall mounted within standard single-gang electrical box.
4. Shall not react to noise or ambient sound.
5. Field-selectable operation set per Owner's requirements.
6. Manual override buttons for field selectable option to change sensor operation from automatic sensor ON to manual ON.
7. Audible alert for impending shutoff.
8. Shall be capable of either Wiring To Neutral or Wiring To Ground (No Neutral).
9. Shall be capable of detection at a level 30" a.f.f. up to 300 s.f. and gross motion up to 1,000 s.f.

C. Color of device and wallplate to be selected from manufacturer's entire selection.

2.02 WALL SWITCH SENSORS W/ DIMMING

A. Provide one of the following approved products:

1. "Acuity Brands"; Sensorswitch #WSX-PDT-D Series.

B. Description:

1. Shall provide line-of-sight passive infrared (PIR) detection of small motion in a 120-degree semi-circular pattern for detection of mobile occupants within the space and combine overlapping ultrasonic microphonics coverage for detection of occupants within the space either idle or located behind obstructions.
2. Push button dimming control.
3. Separate On/Off preset push switch permits turning lights on and off without disturbing the dimming light level setting. Switch shall return light to preset dimming level.
4. Device to fit standard single gang or multi-gang switch boxes.
5. Dual rated for 120/277 volt input. Provides 0-10V output over minimum 20AWG control wires.
6. Shall be approved by the lighting manufacturer for use in conjunction with installed lighting fixtures and dimming ballasts.
7. Shall not react to noise or ambient sound.
8. Field-selectable operation set per Owner's requirements.
9. Audible alert for impending shutoff.

C. Color of device and wallplate to be selected from manufacturer's entire selection.

2.03 SENSORS

A. General:

1. Shall be capable of operating normally with electronic ballasts, PL lamp systems, LED driver systems, and rated motor loads.
2. Shall provide an LED as a visual means of indication at all times to verify that motion is being detected during both testing and normal operation.
3. Shall have UL rated plastic enclosures.

B. Operation:

1. Coverage shall remain constant after sensitivity control has been set. No automatic reduction shall occur in coverage due to the cycling of air conditioning or heating fans.
2. Shall have readily accessible and user adjustable settings for time delay and sensitivity. Settings shall be located on the sensor (not the control unit) and shall be recessed to limit tampering.
3. In the event of failure, a bypass manual override shall be provided on each sensor. When bypass is utilized, lighting shall remain on constantly or control shall divert to a wall switch until sensor is replaced. This control shall be recessed to prevent tampering.
4. Where indicated or where operation is required as intended, sensor shall have an internal additional isolated relay with Normally Open, Normally Closed, and Common outputs for use with HVAC control, Data Logging, BAS connectivity, Daylight Sensor connectivity, and other control options. Sensors utilizing separate components or specially modified units to achieve this function are not acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. It shall be the contractor's responsibility to locate and aim sensors in the correct location required for complete and proper volumetric coverage within the range of coverage(s) of controlled areas per the manufacturer's recommendations.
- B. Rooms shall have ninety (90) to one hundred (100) percent coverage to completely cover the controlled area to accommodate all occupancy habits of single or multiple occupants at any location within the room(s) for the intended use and occupancy.
- C. The locations and quantities of sensors shown on the drawings are diagrammatic and indicate only the rooms which are to be provided with sensors. The contractor shall provide additional sensors if required to properly and completely cover the respective room.
- D. It is the contractor's responsibility to arrange a pre-installation meeting with manufacturer's factory authorized representative, at owner's facility, to verify placement of sensors and installation criteria.
- E. The time delay settings for certain applications or rooms may need to be field adjusted up to the 30-minute time delay. Coordinate this work with the Owner, temperature controls contractor, mechanical contractor, electrical contractor or technology contractor where needed (i.e. restroom exhaust fans etc.).

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- F. Proper judgment must be exercised in executing the installation so as to ensure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference of structural components.
- G. The contractor shall also provide, at the Owner's facility, the training necessary to familiarize the Owner's personnel with the operation, use, adjustment, and problem solving diagnosis of the occupancy sensing devices and systems.

SUBMITTAL CHECKLIST

- 1. Product Data.
- 2. Shop Drawings.

END OF SECTION 26 09 23

SECTION 26 24 13.02 - FEEDER AND BRANCH CIRCUITS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The other Contract Documents complement the requirements of this Section. The General Conditions apply to the work of this Section.

1.02 SCOPE

- A. Provide materials, equipment, labor and supervision necessary to install feeder and branch circuits to include, but not limited to:
 - 1. Conductors
 - 2. Conduit fittings and boxes
 - 3. Overcurrent protection
 - 4. Panelboards
 - 5. Conduit hangers and supports
 - 6. Wiring devices
 - 7. Motor and equipment connections

1.03 STANDARDS AND CODES

- A. Except where otherwise required by this Section, the following Standards and Codes shall govern:
 - 1. Branch circuits: NEC Articles 210 and 220
 - 2. Feeders; NEC Articles 215 and 220
 - 3. Motor circuits; NEC Article 430
 - 4. Grounding; NEC Article 250

PART 2 - PRODUCTS

2.01 FEEDER CIRCUITS

- A. A riser diagram and general layout of feeder circuits are indicated on the drawings. The Contractor shall lay out the feeders generally as indicated, but shall determine the exact layout and routing of feeders so as to best fit the layout of the work.
- B. Conductor sizes for feeder circuits are noted on the drawings or panel schedules.

2.02 BRANCH CIRCUITS

- A. A general layout of branch circuit wiring is indicated on the drawings. Receptacles and appliances shall be on separate circuit from lighting.
- B. Branch panel circuits are numbered to match NEMA pole numbering system; poles 1 and 2 - Phase A, poles 3 and 4 - Phase B, poles 5 and 6 - Phase C, etc.
- C. No. 14 wire will be permitted only on control circuits of relays, contractors, starters, etc. No. 12 wire will be minimum size for any lighting, motor or general branch circuits unless specifically noted otherwise.
- D. Conductor sizes for major branch circuits, such as large motor and equipment branch circuits, are noted on the drawings.
- E. Conductor sizes for lighting, receptacles and small motor branch circuits, with less than 20 ampere connected load, are not shown on drawings. Conductors for such circuits shall be sized as follows:
 - 1. Conductor size for branch circuits 100 feet in length from branch circuit panel to center of load shall not be smaller than No. 12; over 100 feet not smaller than No. 10.
 - 2. Conductor size for exit light circuits shall not be smaller than No. 10.
- F. Where specific conductor sizes required by the drawings are larger than Code required, the larger sizes shall be installed.
- G. Circuits may be arranged in 4-wire feed, 3 circuits and common neutral, in color code previously described, more than 3 circuits in conduit is not permitted.

END OF SECTION 26 24 13.02

SECTION 26 24 16.02 - DISTRIBUTION PANELBOARDS CIRCUIT BREAKER TYPE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The other Contract Documents complement the requirements of this Section. The General Requirements apply to the work of this section.

1.02 SCOPE

- A. Provide equipment, materials, tools, labor and supervision necessary to install Distribution Panelboards.

1.03 STANDARDS AND CODES

- A. Fabrication and installation shall comply with applicable Sections of NEC, Article 284, and shall bear UL label.

1.04 DESCRIPTION

- A. Panelboards described in this Section shall be deadfront, safety type furnished with thermal magnetic, molded case circuit breakers. Shall be for power distribution application and when required shall be suitable for service equipment. Circuit breakers shall have frame and trip ratings as scheduled on Drawings.

1.05 QUALIFICATIONS

- A. Panelboards by Square D, Westinghouse, General Electric or Siemens/ITE.

1.06 SUBMITTALS

- A. Shop drawings to include fabrication details, lug and bus arrangement, ampere and voltage rating, breaker frame sizes and interrupting ratings.

PART 2 - PRODUCTS

2.01 PANELBOARDS

- A. Bussing Assembly and Temperature Rise:
 - 1. Panelboard bus structure and main lugs or main breaker shall have current ratings as shown on the panelboard schedule. Such ratings shall be established by heat rise test with maximum hot spot temperature on any connector or bus bar not to exceed 50°C rise above ambient. Heat rise tests

shall be conducted in accordance with Underwriters= Laboratories Standard UL67. The use of conductor dimensions will not be accepted in lieu of actual heat tests.

2. Equipment ground bus shall be provided for all panels.

B. Safety Barriers:

1. The panelboards interior assembly shall be deadfront with panelboard front removed.

C. Cabinet:

1. Panelboard assembly shall be enclosed in a steel cabinet. The rigidity and gauge of steel to be as specified in UL Standard 50 for cabinets. The size of wiring gutters shall be in accordance with UL Standard 67.
2. Cabinets to be equipped with spring latch and tumbler-lock on door of trim. Doors over 48 inches long shall be equipped with three-point latch and vault lock. All locks shall be keyed alike. Endwalls shall be removable.
3. Fronts shall be of code gauge, full-finished steel with rust-inhibiting primer and baked enamel finish.

D. Circuit Breakers:

1. Equipped with individually insulated, braced and protected connectors. The front faces of all circuit breakers shall be flush with each other.
2. Large, permanent, individual circuit numbers shall be affixed to each breaker in a uniform position (or equip each breaker with a circuit card holder and neatly printed card identifying the circuit).
3. Tripped indication shall be clearly shown by the breaker handle taking a position between ON and OFF.
4. Provisions for additional breakers shall be such that no additional connectors or hardware will be required to add breakers.

E. Integrated Equipment Rating:

1. Each panelboard, as a complete unit, shall have a rating equal to or greater than the integrated equipment rating shown on the panelboard schedule. Such rating shall be established by test with the circuit breakers mounted on the panelboard. The short-circuit tests on the circuit breaker and on the panelboard structure shall be made simultaneously by connecting the fault to each panelboard breaker with the panelboard connected to its rated voltage source. Method of testing shall be per proposed UL standards pertaining to listing of molded case circuit breakers for high-interrupting capacity ratings. The source shall be capable of supplying the specified panelboard short-circuit current or greater. Test data showing the completion of such tests upon the entire range of distribution and power panelboards to be furnished shall be submitted to the Architect, if requested, with or before the submittal or approved drawings. Testing of panelboard circuit breakers for short-circuit rating only with the breaker individually mounted is not acceptable. Also, testing of the bus structure by applying a fixed fault to the bus structure is not acceptable.

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. Securely anchor panelboards to structure to make feeder connection as indicated and as required.

END OF SECTION 26 24 16.02

SECTION 26 27 26 - WIRING DEVICES AND PLATES

PART 1 - GENERAL

1.01 SCOPE

- A. Provide materials, equipment, labor and supervision necessary to install Wiring Devices.

1.02 STANDARDS AND CODES

- A. Except where otherwise required by this Section, the following Standards and Codes shall govern:
1. Receptacles; NEC Article 410K
 2. Wall Switches; NEC Article 380
 3. UL listed
 4. NEMA Standards

1.03 QUALIFICATIONS

- A. Provide products, as approved by the Architect, from one of the following manufacturers:
1. "Hubbell".
 2. "General Electric".
 3. "Legrand/Pass & Seymour".
 4. "Lutron".
 5. "Leviton".
 6. "Arrow Hart".

PART 2 - PRODUCTS

2.01 GENERAL

- A. All wiring devices shall be "Specification Grade" except where higher grade is called for.

2.02 SWITCHES

- A. Switches shall be:
1. Single Pole Toggle Light Switch - 20 amp, 120-277 volt, "Hubbell" No. 1221, "Hubbell" No. 1221-L for lock type.
 2. Double Pole Toggle Light Switch - 20 amp, 120-277 volt, "Hubbell" No. 1222, "Hubbell" No. 1222- L for lock type.

3. Three-Way Toggle Light Switch - 20 amp, 120-277 volt,
"Hubbell" No. 1223, "Hubbell" No. 1223- L for lock type.
4. Four-Way Toggle Light Switch - 20 amp, 120-277 volt,
"Hubbell" No. 1224, "Hubbell" No. 1224-L for lock type.
5. Single pole-double-throw center off light switch - 15 amp, 120-277 volt,
"Hubbell" No. 1381.
6. Momentary Contact Switch - 15 amp, 120-277 volt,
"Hubbell" No. 1556, "Hubbell" No. 1556-L for lock type.
7. Pilot Light Press Switch - 20 amp, 120-277 volt,
Single Pole "Hubbell" No. 1297-I,
Double Pole "Hubbell" No. NY 1514-I,
Three-Way "Hubbell" No. 1298-I.
8. Color: White.

2.03 DIMMER SWITCHES

A. Dimmer switches shall be:

1. Dimmer switch and ballast controller appropriate for specific lamping type being controlled; fluorescent, LED, incandescent, etc.
2. Slide type dimming control. No rotary or toggle type controls permitted.
3. Separate On/Off preset push or rocker switch permits turning lights on and off without disturbing the dimming light level setting. Switch shall return light to preset dimming level.
4. Device to fit standard single gang or multi-gang switch boxes.
5. Dual rated for 120/277 volt.
6. Shall be approved by the lighting manufacturer for use in conjunction with specified lighting fixtures and dimming ballasts.
7. Color: White, Grey, Ivory, Black.

2.04 RECEPTACLES

A. Receptacles shall be:

1. Duplex Receptacle - 2 pole, 3 wire grounding type, back and side wired, 20 amp, 125 volt,
"Hubbell" No. 5362.
2. Receptacles for power and special purpose outlets shall have characteristics and NEMA configurations as per Electrical Symbols list. Supply as needed.
3. Color:
 - a. White, unless otherwise noted.
 - b. Red for dedicated receptacles at Teller Line for electric heaters; refer to Drawing E-102.

2.05 COVER PLATES

A. High impact resistant smooth thermalplastic.

Color: White.

- B. Provide plates for all switches, receptacles, and outlets throughout the entire project.

Provide blank plates for all unused outlets.

- C. Plates for outlets in unfinished spaces shall be of the handy box type.

2.06 EXTERIOR RECEPTACLE COVERS

- A. Provide weatherproof "While-In-Use" covers for all exterior receptacles per NEC, Section 406.8(B)(1) for Outdoor Wet Location covers, equal to "Legrand/Pass&Seymour" WIU Series.

- B. Color to be selected from manufacturer's entire selection.

2.07 GROUND FAULT INTERRUPTING RECEPTACLES (GFI)

- A. Ground fault interrupting receptacles shall be duplex feed through type with test and reset buttons, equal to "Legrand/Pass&Seymour" No. 1591F.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Wiring devices shall be installed and located as follows, unless noted otherwise on the Drawings:
 - 1. Switches: 44 inches above finished floors.
 - 2. Receptacles: 16 inches above finished floors typically; 44 inches above finished floors or 8 inches above countertops; 48 inches above finished floors in shops, mechanical rooms, utility rooms, service spaces, and similar areas where required by the NEC.
 - 3. Dimensions are to bottom of outlet box.
- B. In masonry walls, switches and receptacle heights shall be adjusted as required so outlets are at nearest mortar joint to specified height.
- C. Where light switches are located adjacent to doors, they shall be installed on knob side of door, unless indicated otherwise.
- D. Where walls have wainscot finish, switch height shall be adjusted as required, so switch is either all in wainscot or all in wall above wainscot.
- E. Prior to roughing-in outlet boxes, Contractor shall verify from general construction drawings; door swings, type of wall finishes and locations for counters and work benches.

END OF SECTION 26 27 26

SECTION 26 28 16 - DISCONNECT SWITCHES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The other Contract Documents complement the requirement of this Section. The General Requirements apply to the work of this Section.

1.02 SCOPE

- A. In general, disconnect switches are indicated on the Drawings, and it shall be the Contractor's responsibility to furnish and install all disconnect switches, whether indicated or not, for equipment and motors furnished.
- B. Disconnect switches shall be fused unless otherwise noted. Fuse per nameplate.

1.03 STANDARDS AND CODES

- A. Except where otherwise required by this Section, the following Standards and Codes shall govern:
 - 1. NEC Article 380
 - 2. UL listed
 - 3. NEMA KSI - 1969

1.04 QUALIFICATIONS

- A. Disconnect switches by Square D, Siemens/ITE, General Electric or Cutler-Hammer.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Disconnects for fractional horsepower motors, 1/2-horsepower and smaller, and less than 125 volts, and for equipment of similar capacity and voltage shall be supplied integral with the equipment or shall be a standard snap switch horsepower rated.
- B. Disconnects for fractional horsepower motors larger than 1/2-horsepower and for integral horsepower motors, and for equipment of similar capacity shall be general duty industrial type, with solid neutrals when required.

END OF SECTION 26 28 16

SECTION 26 51 00.01 - LIGHTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The other Contract Documents complement the requirements of this Section. The General Requirements apply to the work of this Section.

1.02 SCOPE

- A. Provide lighting fixtures, accessories, labor, and supervision necessary to install a complete Lighting System.

1.03 STANDARDS AND CODES

- A. Except where otherwise required by this Section, the following Standards and Codes shall govern:
 - 1. NEC Article 410.
 - 2. UL listed.

1.04 SUBMITTALS

- A. Submit catalog cuts giving complete description of fixtures to include photometric curves and method of installation.

1.05 QUALIFICATION

- A. The lighting fixtures listed in the fixture schedule are the basis for design. Includes both aesthetic and performance requirements.
- B. Requests for approval for substitutions must be submitted per Section 01 33 00, complete with all supporting data and product information.
- C. Final review for fixtures will be when shop drawings are submitted. The Architect reserves the right to reject and fixtures which, in his opinion, do not meet the overall lighting system design. Upon request, the fixture supplier shall submit sample fixtures.

PART 2 - PRODUCTS

2.01 FIXTURES

- A. Provide fixtures as indicated on drawings.

- B. Recessed fixtures in soffits and solid surface ceilings shall be furnished with trim kits and supports compatible with construction.
- C. See Electrical Drawings and Lighting Fixture Schedule for additional requirements of all fixtures.

2.02 LED FIXTURES

- A. LED Lamps shall have system life rated to retain a minimum of 70% light output at 50,000 hours of use (L70 at 50,000 hours).
- A. LED lamp color temperatures shall be rated at CRI > 80.
- C. If lumens are indicated on fixture schedule, it is the minimum delivered lumens of output required.
- D. If fixture watts are indicated on fixture schedule, it is the maximum nominal input wattage permitted.
- E. Provide adapters as required for depths of construction at each location and condition. Provide correct trim and mounting as required for each location and condition.
- F. See Electrical Drawings and Lighting Fixture Schedule for additional requirements of LED fixtures.

2.03 LAMPS

- A. Provide lamps from one of the following manufacturers:
 - 1. General Electric.
 - 2. Westinghouse.
 - 3. Phillips.
 - 4. Sylvania.
- B. Furnish lamps for all fixtures as per schedule on drawings.
- C. Provide lenses in recessed fixtures, as required by code, whether scheduled or not.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install fixtures; coordinate exact location with Architect's Drawings.
- B. Fixtures shall be grounded. Lamp sockets shall be wired so that the outer shell is connected to the neutral grounded conductor.
- C. Recessed fixtures in removable ceilings shall be connected to the branch circuit with flexible conduit and branch circuit wire from an accessible junction box. Fluorescent fixtures shall not be used for branch circuits feed-through.

- D. Fixtures recessed in furred ceiling shall be installed so that they can be removed from below the ceiling.
- E. Fixtures installed in plastered or solid ceilings shall not be supported directly from the ceiling. Support fixtures from metal bar hangers, stud framing, or Unistrut channels attached to the structure.
- F. Fixtures installed in acoustical lay-in ceilings shall not be supported directly from ceiling or grid. Support fixtures from metal bar hangers, rods, or cables attached to the structure. Install supports per requirements of the NEC, IBC, and local authorities, but never less than two opposing corners.
- G. Provide unswitched "hot" conductor from same circuit serving lighting in that area to provide continuous power to nightlight emergency lighting and exit lighting, whether shown or not.
- H. Make final connections between fixtures and wiring system.
- I. Replace any lamps which do not operate properly, or which have been used for temporary lighting.

END OF SECTION 26 51 00.01

SECTION 27 00 00 - COMMUNICATION SYSTEM

PART 1 - GENERAL

1.01 SCOPE

- A. Provide materials, equipment, labor and supervision necessary to install complete the following systems:
 - 1. Data System.

PART 2 - PRODUCTS

2.01 DATA SYSTEM

- A. Install conduit, back boxes and blank plates for future system.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All equipment power and wiring and grounding shall conform to the National Electrical Code and applicable local codes. Electronic equipment, antennas and antenna supports shall be grounded using a No. 5 solid copper wire.
- B. Cable shall be adequately supported per NEC. The connectors shall be specifically designed for the type cable in use.
- C. Input cables shall not be bundled with output cables. Physical separation between input and output cables shall be maintained as much as practical.
- D. All equipment shall be suitably mounted in cabinets or otherwise solidly supported. Equipment suspended by its connection is not acceptable.
- E. Antennas may be supported by the existing mast. Appropriate guying shall be used as required. No attachment shall be made to cornices or copings, and any penetration of the roof surface shall be sealed by the roofing warranter.
- F. All outdoor connections shall be weatherproofed through approved methods. Cable entrances to the building shall be done in an approved manner.

3.02 TESTING

- A. Upon completion of the system installation, it shall be the responsibility of the contractor to perform the necessary adjustments and balancing of all controls to insure proper system operation.

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- B. The system shall be physically inspected by an authorized representative of the customer to assure all equipment is installed in a neat and workmanlike manner as called for by the plans and specifications.
- C. The contractor shall conduct an operating test for approval. The system shall be demonstrated to operate in accordance with the requirements of these specifications. The test shall be performed in the presence of the Architect/Engineer. The contractor shall furnish all equipment and personnel required for the tests.

END OF SECTION 27 00 00

SECTION 27 01 10 – SUPPORT AND WARRANTY

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. All labor, materials, tools, equipment and certifications required for the complete installation of work required by the Contract Documents.

1.02 CONTRACTOR SUPPORT

- A. Certifications:
 - 1. Cabling installer must be certified.
 - 2. Contractor must have more than 10% of field staff BISC certified.
- B. Repair Service Labor:
 - 1. Shall make all repairs or replacements to fulfill obligations of the warranty at no additional cost to the Owner.
 - 2. This labor guarantee shall be in full effect for a minimum of 5 years.

1.03 MANUFACTURER WARRANTY

- A. Cable Manufacturer:
 - 1. Provide extended warranty protection for a minimum of 25 years.
 - 2. Cover all manufacturer's products within the cable installation.
 - 3. Shall cover repair or replacement of any length of product found to be defective or not performing to capabilities and specifications of the product.
 - 4. Shall be written for the entire dollar value of the cable's original installation, to allow for full replacement of the cable product if necessary.
- B. Cabling Contractor:
 - 1. Shall be responsible for registering the project on behalf of the Owner.
 - 2. Shall submit the warranty in full effect as part of the closeout documentation.

1.04 SUBMITTALS

- A. Cable manufacturer's warranty information.
- A. Certifications of Contractor and installers.
- C. Contractor labor guarantee for service repair.

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SUBMITTAL CHECKLIST

1. Cable Manufacturer's Warranty information.
2. Contractor Certifications.
3. Contractor Labor Guarantee.

END OF SECTION 27 01 10

SECTION 27 01 20 – OPERATION OF COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all labor and material required to complete the network installation. This includes all areas within the building, and includes all cable, faceplates, sleeves, fire-stopping, jacks, servers, routers, patch panels and connectors.
- B. Includes minimum requirements for the Data, Voice and Video Networks.
- C. Star topology utilizing structure wiring system is required, based on a Main Distribution Frame (MDF).
- D. Video network will be transported from the Video Headend in the MDF through the Local Area Network. All CATV signals to the various building viewing locations will be digitally encoded.
- E. The Main Distribution Frame (MDF) located in Mechanical 111 shall be used as the central point in the design of the Network. Category 6 Unshielded Twisted Pair cable shall be provided to each device location.
- F. Each drop location is noted on Drawing E-102.

1.02 QUALITY ASSURANCE

- A. The following industry standards are the basis for the structured cabling system described herein:
 - 1. National Electric Code (NFPA-70)
 - 2. TIA/EIA-568-B Commercial Building Telecommunications Cabling Standard
 - 3. TIA/EIA-569, TIA/EIA-569-B, TIA/EIA-606-A, IEEE802.3 LAN Ethernet Standards
 - 4. Installation BICSI Manual, most recent edition
 - 5. J-STD-607A Commercial Building Grounding/Bonding Requirements
 - 6. ISO/IDC 11801 Generic Cabling for Customer Premises
 - 7. The most recent versions of all above documents apply to this project.

1.03 SUBMITTALS

- A. Provide manufacturers product data sheets for all proposed materials and equipment

PART 2 - PRODUCTS

2.01 MATERIALS & EQUIPMENT

- A. Shall be of the quality and manufacturer indicated. The equipment specified is based upon the acceptable manufacturers listed.

- B. Substitutions shall follow procedures outlined in Section 01 33 00.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All equipment and material shall be installed in a neat and workmanlike manner.
- B. All methods of construction not specifically described or indicated in the contract documents shall be subject to control and approval of Architect.

END OF SECTION 27 01 20

SECTION 27 05 28 – INTERIOR COMMUNICATION PATHWAYS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Interior Horizontal Cabling Communication Pathways
- B. Pathways include but not limited to:
 - 1. Conduit
 - 2. Innerduct
 - 3. Sleeves
 - 4. Cable Hangers

1.02 QUALITY ASSURANCE

- A. Materials and work specified herein shall comply with the applicable requirements of:
 - 1. National Electric Code (NFPA 70) including the following Articles:
 - a. 318 Cable Trays
 - b. 331 Electrical Nonmetallic tubing
 - c. 348 Electrical metallic tubing
 - d. 349 Flexible metallic conduit
 - e. 350 Flexible metal tubing
 - f. 351 Liquid-Tight Flexible metal conduit and Liquid-Tight flexible nonmetallic conduit.
 - g. 352A Surface Metal Raceways
 - h. 352B Surface Nonmetallic raceways.
 - i. 353 Multioutlet Assembly
 - j. 354 Underfloor raceways
 - k. 362 Metal Wireways and nonmetallic Wireways
 - l. 370 Outlet, Device, Pull and Junction Boxes, Conduit Bodies and Fittings
 - m. 645 Information Technology Equipment
 - n. 770 Optical Fiber Cables and Raceways
 - o. 800 Communications Circuits
 - 2. ANSI-C80.3 Specifications for Electrical Metallic Tubing, Zinc-coated.
 - 3. Telecommunications Industry Association (TIA) standards:
 - a. ANSI/TIA/EIA-568-B Commercial Building Telecommunications Cabling Standard
 - b. ANSI/TIS/EIA-569-A Commercial Building Standard, Telecommunications Pathway & Spaces
 - c. EIA/TIA-606-A Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
 - d. EIA/TIA-607 Commercial Building Grounding and Bonding requirements for Telecommunications

4. The following BICSI guidelines
 - a. BICSI Telecommunications Distribution Design Manual (11th edition)
 - b. BICSI Customer Owned Outside Plant Design Manual (4th edition)
 - c. BICSI Telecommunications Cabling Installation Manual (5th edition)
5. The following UL Standards.
 - a. UL 1, 2000 Flexible Metal Electrical Conduit
 - b. UL 3, 1999 Flexible Nonmetallic Tubing for Electric Wiring
 - c. UL 5, 1996 Surface Metal Electrical Raceways and Fittings
 - d. UL 360, 1996 Liquid-Tight Flexible Steel Conduit, Electrical
 - e. UL 514B, 1996 Fittings for Conduit and Outlet Boxes
 - f. UL 797, 1997 Electrical Metallic Tubing
 - g. UL 870, 1995 Electrical Wireways, Auxiliary Gutters and Associated Fittings.

1.03 SUBMITTALS

- A. Product Data for:
 1. Conduit
 2. Sleeves
 3. Cable Hangers
 4. Wireways and Wire Troughs

PART 2 - PRODUCTS

2.01 CONDUIT

- A. Rigid Non-Metallic PVC Conduit:
 1. Heavy wall, Schedule 40
 2. Rated for use with 90 degree C conductors
 3. UL listed for direct burial and concrete encasement
- B. Fittings for Rigid Non-Metallic PVC Conduit
 1. Solvent cementing type
 2. Insulated throat up to and including 1"
 3. Plastic bushing for sizes 1-1/4" and larger
 4. Conduit body types, shapes and sizes as required to suit application and NEC requirements.

2.02 INNERDUCT

- A. PVC Riser rated or plenum rated as required.
- B. Size: 1-1/4" diameter

- C. Color: Orange
- D. UL Listing: 2024 Standard

2.03 CABLE HANGERS

- A. Prefabricated, zinc coated, carbon steel, wide base hangers designed specifically for UTP and Optical Fiber cable installations.
- B. Open top, rolled edges and a 2" to 4" minimum diameter loop as required.
- C. Beam clamps, rod fasteners, flange clips and brackets as job conditions require.

PART 3 - EXECUTION

3.01 CONDUIT

- A. Electrical Metallic Tubing, Rigid Metal Conduit and Rigid PVC are allowed conduit. Flexible metal conduit is not allowed.
- B. Conduit runs to work areas shall service no more than one (1) communication outlet.
- C. Conduits shall be sized to accept 50% future growth; sizing shall account for fire code capacity restrictions.
- D. Identification: Clearly label conduit at exposed ends indicating closet or outlet where conduit terminates.
- E. Fire stop all pathways as previously specified in the Project Manual.
- F. All backbone conduits shall be marked with 1" reflective tape every 25 feet.
- G. Bush all conduit ends not bushed by Division 16.

3.02 CABLE HANGERS

- A. Provide cable hangers a maximum 3 feet center/center wherever cable tray or conduit is not present.
- B. Ceiling ties and rods shall not be used to hang cable or cable supports without Architect approval.
- C. Load hangers per manufacturers recommendations. Provide hangers side by side on a common bracket where cable quantities require.
- D. Do not install cables loose above non-accessible ceilings
- E. Install cables minimum 6 inches above lay-in ceiling tile. Cables shall **not touch** the ceiling.
- F. Do not support cable from ceiling system tie wires or grid in fire rated systems

- G. Utilize "Erico Caddy Cablecat" adjustable cable support when cable trays are not available. Review locations with Architect prior to use.

3.03 SUPPORTING DEVICES

- A. Provide steel angles, channels and other materials necessary for the proper support of wall-mounted cabinets, racks, panels, etc.
- B. Cabinets, large pull boxes, and cable support boxes shall be secured to ceiling and floor slab and not supported from conduits. Small equipment boxes, etc. as approved by Architect, may be supported on walls.
- C. Racks for support of conduit and heavy equipment shall be secured to building construction by substantial structural supports.

3.04 GENERAL

- A. Support raceways from building construction. Do not support from ductwork, piping or equipment hangers.
- B. Support outlet, pull and junction boxes independently from building construction. Do not support from raceways.
- C. Coordinate all raceway runs with other trades.
- D. Install all open raceways minimum 6 inches away from any light fixture or other source of EMI (Electro-magnetic interference)
- E. Bond and ground all horizontal pathways per NEC Article 250.
- F. All horizontal pathways shall be sized for a minimum of 50% future growth.

SUBMITTAL CHECKLIST

- 1. Product Data

END OF SECTION 27 05 28

SECTION 27 05 53 – TESTING, IDENTIFICATION AND ADMINISTRATION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Minimum requirements for the testing, certification, administration and identification of backbone and horizontal cabling.

1.02 QUALITY ASSURANCE

- A. All testing procedures and testers shall comply with applicable requirements of:
 - 1. ANSI/TIA/EIA-568-B.1 Commercial Building Telecommunications Cabling Standard, Part 1 General Requirements.
 - 2. ANSI/TIA/EIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant.
 - 3. ANSI/TIA/EIA-526-14A Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant.
- B. Identification and administration work specified herein shall comply with the applicable requirements of:
 - 1. ANSI/TIA/EIA-606-A Administration Standards.
 - 2. ANSI/TIA/EIA-569-A Pathway and Spaces.
 - 3. ANSI/TIA/EIA-568-B Telecommunications Cabling Standard.
 - 4. ANSI/TIA/EIA-758-A Customer Owned Outside Plant Telecommunications Cabling Standard.
 - 5. BICSI Telecommunications Cabling Installation Manual.
 - 6. BICSI Telecommunications Distribution Methods Manual.

1.03 SUBMITTALS

- A. Manufacturer's catalog sheets and specifications for fiber and copper cable testers.
- B. Test Reports.

PART 2 - PRODUCTS

2.01 100 OHM UTP TESTER

- A. Capable of testing to TIA 568-B.1 criteria.
- B. Physical interface shall be modular RJ-45 connector and a serial port with DB-9 connector.
- C. Auto Testing to determine if cable meets requirements of TIA/EIA 568-B.1, ISO Class C, D, 10 Base-T, Token Ring, Fast Ethernet and ATM Standards.

- D. Acceptable Manufacturer: Fluke.

2.02 LABELS

- A. Meet legibility, defacement, exposure and adhesion requirements of UL 969.
- B. Preprinted or laser printed type.
- C. Where used for cable marking, provide vinyl substrate with a white printing area and a clear "tail" that self-laminates the printed area when wrapped around the cable.
- D. Where insert type labels are used, provide clear plastic cover over label.
- E. A standard style, **size 10, bold** font type shall be used when making faceplate labels. Cable Management Inventory Record shall be used to record all installation details.
- F. Acceptable Manufacturers: Brothers.

PART 3 - EXECUTION

3.01 100 OHM UTP CABLE TESTING

- A. Testing parameters include horizontal Link/channel for all installed drop locations.
- B. Test cable with test set to match NVP for the cable as stated by the cable manufacturer.
- C. Test parameters shall include Wire Map, Length, Attenuation, PSNEXT, PS-ACR, PS-ELFEXT and Return-Loss.
- D. Wire Map:
 - 1. Verify pair to pin termination at each end and check for conductivity errors.
 - 2. Wire map shall indicate the following for each of the eight conductors:
 - a. Continuity to remote end.
 - b. Shorts between any two or more conductors.
 - c. Crossed Pairs.
 - d. Reversed Pairs.
 - e. Split Pairs.
 - f. Any other miss wiring.
- E. Minimum acceptable cable performance per criteria established in TIA/EIA-568-B.1 Category 6 (TIA/EIA 568-B.2-1).

3.03 IDENTIFICATION AND LABELING

- A. Conform to specific labeling requirements outlined below during cable installation and termination.
- B. Backbone cables shall be marked at each endpoint and at all intermediate pull/access points or junction boxes.
- C. Backbone label shall indicate:
 - 1. Origination TR ID.
 - 2. Destination TR ID.
 - 3. Sheath ID.
 - 4. Strand or Pair Range.
- D. Horizontal cable shall be marked at each end and on the sheath and indicate:
 - 1. Ultimate destination location.
 - 2. Telecommunications Room, MDF or IDF location.
 - 3. Patch Panel.
 - 4. Panel Port.
- E. All new UTP cable runs shall be numbered before the run and shall be labeled **consecutively** with a unique identification numbering scheme. No new drops shall be duplicated with like numbers. This unique identification numbering scheme is as follows:
 - 1. XX-Y-ZZ.
 - 2. XX is a 2-digit number representing a closet number, such as 00, 01, 02, etc. with 00 being the MDF and 01 is IDF-1, etc.
 - 3. Y indicates the corresponding patch panel ID. Patch panels should be labeled starting with the letter A and progress thru the alphabet for each additional panel.
 - 4. ZZ is a 2-digit number representing the number of the patch panel port on which the cable terminates. This number should range from 1 thru 24 or 1 thru 48.
 - 5. An example would be 00-A-22, where '00' is the MDF, 'A' is patch panel A and '22' is port 22 on patch panel A.
- F. Faceplates and Patch Panels:
 - 1. Faceplates:
 - a. Label to indicate MDF/IDF number (00 thru 0?), patch panel label (A thru Z) and patch panel (1 thru 24 or 1 thru 48) to which the cable is wired for each cable it houses.

3.04 RECORD COPY AND AS-BUILT DRAWINGS

- A. Provide record copy drawings (in CAD format) periodically throughout the project as requested by the Architect and at end of the project.
- B. Record copy drawings shall include notations reflecting the as-built conditions of any additions to or variation from the drawings provided.

- C. Provide hard copy and electronic copy of cable inventory which includes all circuit numbers for UTP.

3.05 TEST RESULTS

- A. Horizontal Copper Cabling:
 - 1. Contractor shall test all cables and submit all horizontal copper cable test result data in electronic format, with the resulting file formatted with one (1) test result per 8.5" x 11" page.
 - 2. Provide the test results in an acceptable format:
 - a. Export or download test results from cable tester to a **.txt** format.
 - b. Open the .txt file in Microsoft Word and save the file as a **.doc** file.
 - 3. Provide all test results in a 3-ring binder (maximum 3").
 - 4. Label binders
- B. Contractor shall submit (one) 1 copy of software capable of viewing the electronic test results.

SUBMITTAL CHECKLIST

- 1. Product Data for Testing Equipment.
- 2. Test Reports.

END OF SECTION 27 05 53

SECTION 27 11 00.02 – EQUIPMENT ROOMS AND SERVICE ENTRANCES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Building Utility Entrances at the Main Distribution Frame (MDF)
- B. Voice demarc in the MDF
- C. Minimum installation requirements for service to the Telecommunications Room, including but not limited to the following:
 - 1. Building Entrance Terminals
 - 2. Surge Protection Modules
 - 3. Grounding and Bonding
 - 4. Backboards
 - 5. Termination Blocks
 - 6. UTP Cross Connects
 - 7. Utility Coordination

1.02 QUALITY ASSURANCE

- A. Materials and work specified herein shall comply with the applicable requirements of:
 - 1. ANSI/TIA/EIA-568-B Commercial Building Telecommunications Cabling Standard
 - 2. ANSI/TIA/EIA-569-A Commercial Building Standard for Telecommunication Pathway and Spaces
 - 3. TIA/EIA-606-A Administration Standards for Telecommunications Infrastructure
 - 4. TIA/EIA-607-Commercial Building Grounding and Bonding Requirements for Telecommunications
 - 5. NEMA-250
 - 6. Federal Communication Commission 47 CFR 68
 - 7. BICSI Telecommunications Distribution Design Manual (11th edition)
 - 8. BICSI Customer Owned Outside Plant Design Manual (5th edition)
 - 9. BICSI Telecommunications Cabling Installation Manual (5th edition)
 - 10. ANSI/NECA/BICSI-568-2001 Standard for Installing Commercial Building Telecommunications Cabling.
 - 11. ADA-Americans with Disabilities Act
 - 12. NFPA 70 - 2002 including:
 - a. NEC Article 770
 - b. NEC Article 800
 - 13. Underwriters Laboratory

1.03 SUBMITTALS

- A. Manufacturer's catalog sheets and specifications for:

1. Building Entrance Terminals
2. Surge Protection Modules
3. Grounding and Bonding
4. Termination Blocks
5. UTP Cross Connects

PART 2 - PRODUCTS

2.01 BUILDING ENTRANCE TERMINALS

A. Protect up to 50 lines (pairs) and meet the following requirements:

1. Input stub (tip) cable shall be 26AWG shielded cable. Contractor to field verify actual stub length in field.
2. Input stub shall serve as internal fuse link
3. Input stub shall be equipped with heavy duty strain relief and encapsulated cable connector.
4. Output stub cable shall be 24 AWG shield cable. Contractor to field verify actual stub length in field.
5. Wall or frame mountable
6. Accommodate industry standard 5 pin protection modules.
7. Plastic components meet or exceed UL 497.

2.02 SURGE PROTECTION MODULES

A. 5-Pin, 3 Element gas type protection modules which meet the following requirements:

1. Provide true balanced operation
2. Over voltage on either side shall cause the entire tube to ionize to provide a simultaneous path to ground for both sides of the circuit.
3. UL 497 listed
4. Ground pin: Tin
5. Tip and Ring pins: Gold alloy
6. Module color: Black
7. Spare Module color: Green
8. Nominal DC Breakdown: 350V @ 100V/ μ sec
9. Impulse Breakdown Voltage: 700A @ 100V/ μ sec and 150A @ 1KV/ μ sec
10. DC Holding Current: 135V for <150ms
11. Surge Life:
 - a. 10A: 10 x 1000 μ sec > 3000
 - b. 100A: 10 x 1000 μ sec > 300
 - c. 10kA: 8 x 20 μ sec > 10
 - d. 20kA: 8 x 20 μ sec > 1
 - e. 65Arms, 11 cycles: 130A total > 1
 - f. 10Arms, 1 sec: 20A total > 10
12. Capacitance: < 1pf for 1 Vrms @ 1Khz, 50 DCV
13. Insulation Resistance: >100M ohms @ 50 VDC
14. Fail Safe Operation:

- a. 1A: < 50 sec
- b. 5A: < 15 sec
- c. 20A: < 10 sec
- d. 60A: < 3 sec

15. Current Limiters:

- a. Hold Current (ma) @ 20 C = 145
- b. R min / max ohms = 3 / 6

2.03 GROUNDING AND BONDING

- A. #6 AWG copper wire
- B. NEMA approved ground bar assembly to meet following requirements:
 - 1. Copper Ground Bar (1/4" x 4" x 10") with 9/32" holes spaced 1-1/8" apart
 - 2. Insulators
 - 3. 5/8" lock washers
 - 4. Wall mounting brackets
 - 5. 5/8" x 11" x 1" HHCS bolts.

2.04 BACKBOARDS

- A. 4' x 8' x 3/4" BCX, fire rated plywood
- B. Painted with acrylic interior, fire-retardant paint, gray color.

2.05 WALL MOUNTED DISTRIBUTION RINGS

- A. Open ended distribution rings for wall mounting
- B. Erico Caddy Fasteners or equal

2.06 TERMINATION BLOCKS ON FRAME

- A. 110 IDC style blocks
- B. 50 pair blocks
- C. Connecting clip, designation strip, plastic covers and retaining clip necessary to terminate cables.

2.07 UTP CROSS CONNECT

- A. Same gauge (22 AWG and 24 AWG) as feed cables to which it is being connected

B. Colors:

1. White-Blue for voice circuits
2. White-Orange for Ethernet

PART 3 - EXECUTION

3.01 BUILDING ENTRANCE TERMINALS

- A. Shall be wall mounted.
- B. Field verify actual length required for input and output stubs.
- C. Splice feed cable to tip cable for complete installation
- D. Install #6 ground wire as straight as possible from terminal to ground bar.

3.02 SURGE PROTECTON MODULES

- A. Install to fully protect all pairs entering building

3.03 GROUNDING AND BONDING

- A. Install grounding bar and connect with #6 AWG copper ground cable to electrical service ground or independently driven ground rod.
- B. Bond all equipment to grounding bar with #6 AWG copper ground cable.
- C. Bond metallic equipment racks, conduits, cable tray, ladder racks to ground bar
- D. All connectors and clamps to be mechanical type made of silicon bronze.
- E. Terminals shall be solderless compression type, copper long-barrel NEMA two bolt.
- F. Bond the shield of shielded cable to the ground bar in Telecommunications Room.

3.04 BACKBOARDS

- A. Install full height on linear wall space used for anchoring equipment.
- B. Start backboard 6" above finished floor and terminate 6" below ceiling.
- C. Anchor backboard to support minumum 1,500 pounds of weight.

- D. Install distribution rings for the cross-connect fields above all wall mounted blocks. Two rings per vertical row of blocks. Mount rings with two hex head screws per ring.

3.05 PUNCH DOWN BLOCKS

- A. Install on plywood backboard. Top of block shall not be higher than 5'-6".
- B. Mount with steel, zinc plated 5/16" slotted hex head, #10 x 3/4" screws.
- C. Install Designation Strips, color-coded with industry standard coded field as required.

3.06 CROSS CONNECT

- A. Cross connects shall be made with 1 pair and 2 pair wire as required by circuit being connected.
- B. Coordinate cross connect colors.

SUBMITTAL CHECKLIST

- 1. Product Data Sheets

END OF SECTION 27 11 00.02

SECTION 27 15 00 – HORIZONTAL CABLING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Horizontal cabling is the portion of the UTP cabling system, and other types of cabling, that extends from the work areas to the Main Distribution Frame (MDF) or Intermediate Distribution Frame (IDF). The horizontal cabling shall be configured in a star topology, and include horizontal cables, the mechanically terminated jacks/inserts and the faceplates in the work areas.
- B. Locations of user drops are shown on Drawing E-102.
- C. This section also includes minimum requirements for the following:
 - 1. Category 6 UTP Cable.
 - 2. Category 6 Patch Cords and Cables.
 - 3. Category 6 Jacks.
 - 4. Faceplates.
 - 5. Control Wiring.
 - 6. HDMI Cable.
 - 7. Installation and Termination Methods.

1.02 QUALITY ASSURANCE

- A. Strictly adhere to all Category 6 installation practices when installing UTP data cabling.
- B. Materials and work specified herein shall comply with the applicable requirements of:
 - 1. ANSI/TIA/EIA-568-B Commercial Building Telecommunications Cabling Standard.
 - 2. ANSI/TIA/EIA-569-A Commercial Building Standard for Telecommunication Pathway and Spaces.
 - 3. TIA/EIA-606-A Administration Standards for Telecommunications Infrastructure.
 - 4. TIA/EIA-607-Commercial Building Grounding and Bonding Requirements for Telecommunications.
 - 5. NEMA-250.
 - 6. Federal Communication Commission 47 CFR 68.
 - 7. BICSI Telecommunications Distribution Design Manual (11th edition).
 - 8. BICSI Customer Owned Outside Plant Design Manual (5th edition).
 - 9. BICSI Telecommunications Cabling Installation Manual (5th edition).
 - 10. ANSI/NECA/BICSI-568-2001 Standard for Installing Commercial Building Telecommunications Cabling.
 - 11. ADA - Americans with Disabilities Act.
 - 12. NFPA 70 - 2002 including NEC Article 770 and NEC Article 800.
 - 13. Underwriters Laboratory (UL).

1.03 SUBMITTALS

- A. Manufacturer's catalog sheets and specifications for all products to be installed.
- B. Test Results and Documentation per Section 17080.

PART 2 - PRODUCTS

2.01 CATEGORY 6 UTP CABLE (CAT CABLE)

- A. Acceptable Manufacturer and Equipment:
 - 1. "General Cable"; GenSpeed 6000 Enhanced.
 - 2. "Belden"; Data Twist 4800.
 - 3. "Panduit"; Pan-Net TX6000.
 - 4. "Hubbell"; NEXTSPEED.
 - 5. "Remeo"; Category 6, 550MHz.
- B. Physical Characteristics:
 - 1. Plenum rated cable.
 - 2. Consist of (4) 23 or 24 AWG twisted copper pairs, 100OHM. All pairs individually insulated.
 - 3. Color Coding:
 - a. Pair 1: Blue-White/Blue.
 - b. Pair 2: Orange-White/Orange.
 - c. Pair 3: Green-White/Green.
 - d. Pair 4: Brown-White/Brown.
 - 4. Fluoropolymer insulation and low-smoke, flame-retardant PVC jacket.
 - 5. Manufacturer's cable is required to test to 400MHz minimum and validated to 250MHz standards.
 - 6. Cable to withstand a bend radius of 1 inch at -20 degrees C without jacket or insulation cracking.
 - 7. Provide cables from all workstation ultimate outlet and device locations and terminated to patch panels in MDF or IDF as indicated on the Drawings.
- C. Compliances:
 - 1. Transmission Characteristics shall meet or exceed ANSI/TIAEIA 568-B.2 or ANSI/TIAEIA 568-C.2.
 - 2. Shall meet applicable requirements of ANSI/ICEA S-80-576.
 - 3. Ultimate breaking strength of 400 N minimum measured in accordance with ASTM D 4565.
 - 4. Labeled third party "Verified Category 6".
- C. Color:
 - 1. Black: Data.
 - 2. Red: Camera.
 - 3. Blue: Wireless.
 - 4. Orange: Security.
 - 5. Green: Phone.

2.02 CATEGORY 6 PATCH CORDS AND CABLES

A. Acceptable Manufacturer and Equipment:

1. See listings for typical Category 6 UTP Cable.

B. Physical Characteristics:

1. Same performance as all other Category 6 Cable.
2. Data jacks pre-installed at each end of cable.
3. 50% in 5 feet length and 50% in 10 feet length.
4. Provide one patch cable per terminated port in the MDF and IDF.

C. Color:

1. Black: Data.
2. Red: Camera.
3. Blue: Wireless.
4. Orange: Security.
5. Green: Phone.

2.03 CATEGORY 6 JACKS

A. Acceptable Manufacturers and Equipment:

1. "Panduit"; MiniCom Cat6 CJ688.
2. "Panduit"; #CJ688TG Modular Jack.
3. "Belden"; GigaFlex 6+.
4. "Hubbell"; NEXTSPEED Cat6.

B. Physical Characteristics:

1. Functional from -10 degrees F to 140 degrees F.
2. Meet or exceed ANSI/TIAEIA 568-B.2 or ANSI/TIAEIA 568-C for Category 6.
3. Modular RJ45 jacks that snap into configured faceplates meeting IEC 603-7 durability requirements.
4. 110 IDC, RJ45 type suitable for eight 22-26 AWG wires and be certified Category 6 compliant.
5. Wired in accordance with EIA/TIA T568B polarization sequence.

C. Color:

1. Black: Data.
2. Red: Camera.
3. Blue: Wireless.
4. Orange: Security.
5. Green: Phone.

2.04 FACEPLATES

A. Acceptable Manufacturers:

1. "Panduit".
2. "Belden".
3. "Hubbell".
4. "Interlink".
5. "Leviton".
6. "Phillips".
7. "Axis".
8. "TecNec".
9. "Wiremold".

B. Description:

1. High impact resistant, thermoplastic, front-loading, flush-mounted design.
2. Integral cable labels and easy snap-in assembly.
3. Typical single gang faceplates shall be 2.75" x 4.5" and accept snap-in modules in 3-unit combinations.
4. Typical double gang faceplates shall be 4.5" x 4.5" and accept snap-in modules in 6-unit combinations.
5. Provide for special connections and configurations as indicated on the Drawings or as otherwise required for connections to specific components, whether specifically indicated or not.
6. UL listed.

C. Color: White.

2.05 CONTROL WIRING

A. Acceptable Manufacturers and Equipment:

1. "Belden"; EIA-485 Cable.

A. Physical Characteristics:

1. Plenum rated cable.
2. 24 AWG stranded, tinned copper conductors.
3. 2-pair.
4. Foam FEP insulation with flexible plenum jacket.
5. TC braid shielding, 90% coverage.

C. Color: As selected from manufacturer's entire selection.

2.06 HDMI CABLE

A. Acceptable Manufactures:

1. "Belden".
2. "West Penn Wire".
3. "General Cable".

B. Physical Characteristics:

1. Plenum rated cable.
2. 1080i Verified and 1080p Verified.
3. Cable runs continuous between components.

C. Color: Black.

2.07 AUDIO/VIDEO CONNECTORS

A. Acceptable Manufacturers:

1. "Panduit".
2. "Belden".
3. "Hubbell".

B. Provide connector modules for faceplates and components as designated in schematic drawings and as required for each connector and equipment condition to include:

1. HDMI:
 - a. Female connector in faceplate, where applicable.
 - b. Male connector at each end of cable.
 - c. Gold plated connectors.

PART 3 - EXECUTION

3.01 UTP CAT CABLE INSTALLATION

- A. Install all wiring concealed in walls in conduit.
- B. Install all exposed wiring in conduit or surface raceway.
- C. Install all wiring above ceilings in open top cable hangers or cable tray.
- D. Support cable above accessible ceilings at 3 feet on center. Attach cable support to building structure.
- E. Do not untwist cable pairs more than 1/2" when terminating.

- F. All cables that do not pass Category 6 requirements shall be removed and replaced at Contractor's expense.
- G. Maximum cable length 90 meters (295 feet).
- H. Cables shall have no physical defects such as cuts, tears, or bulges in the outer jacket. Cables with defects or damaged shall be replaced at Contractor's expense.
- I. Neatly bundle and tie all cable in closets. Provide 10 feet service loop at each end of cable drop.
- J. Maintain following clearances from EMI sources:
 - 1. Power cable: 6 inches.
 - 2. Fluorescent Lights: 12 inches.
 - 3. Transformers: 36 inches.
- K. Pulling Cable:
 - 1. Do not install Category 6 cable with more than 110N (25 lbs) pull force, as specified in EIA/TIA and BICSI practices.
 - 2. Utilize appropriate cable lubricant in sufficient quantity to reduce friction to acceptable levels for:
 - a. Long pulls inside conduit.
 - b. Pulls of multiple cables into a single small bore conduit.
 - c. Conduit runs that exceed 180 degrees of accumulated bends.
 - 3. Use tensile rated cords (ie fishing line) for difficult or questionable pulls to judge whether a particular pulling situation is within the tolerances outlined.
- L. Cable jackets that are chaffed or burned exposing internal conductor insulation or have any bare copper (shiners) shall be replaced.
- M. Firestop all openings where cable is installed through a fire barrier or rated assembly.
- N. Terminate cable per EIA/TIA T568B or T568C standard pin assignments.
- O. Test, label and document per Section 27 05 53.

3.02 INSERTS AND FACEPLATES

- A. All cables shall be terminated with high density modular jacks that snap into a faceplate mounted on a wall outlet box or surface raceway.
- B. Outlet boxes shall be secured to building with mechanical fasteners. Adhesive fasteners are not allowed.
- C. All openings not used shall be fitted with appropriate blank inserts.
- D. Test, label and document per Section 27 05 53.

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First Harrison Bank

HORIZONTAL CABLING
27 15 00 - 7
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SUBMITTAL CHECKLIST

1. Product Data Sheets.
2. Test Results.

END OF SECTION 27 15 00

SECTION 31 00 00 - EARTHWORK

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Work generally includes, but not by way of limitation, the following:
 - 1. The extent of earthwork is shown on drawings.
 - 2. Preparation of subgrade for foundations and slab-on-grade.
 - 3. Backfilling of trenches for utilities and services.
 - 4. Subgrade shall be graded to drain during the entire construction period.
 - 5. Geotextile fabric to act for soil stabilization, soil separation, weed barrier, or moisture barrier in a variety of earthwork, sitework or landscape applications.
- B. Contractor is responsible for implementing any proper means and methods necessary to complete work of this section based on normal seasonal environmental conditions.
- C. No additional compensation will be considered for contractor's assumption that work would be completed under ideal environmental conditions.
- D. Unless otherwise directed by the Architect, it shall be assumed that all needed materials shall be brought in from offsite and supplied and installed by the Contractor.
- E. Unless otherwise directed by the Architect, it shall be assumed that all excess materials shall be removed from the site and hauled off and disposed of offsite by the Contractor.

1.2 QUALITY ASSURANCE

- A. Codes and Standards:
 - 1. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Service:
 - 1. Contractor will provide a Soils Engineer, as acceptable to the Architect, for testing and inspection service for quality control testing during all earthwork operation.
 - 2. See Section 01 45 00 - Quality Control.
 - 3. If not already covered by another Section of these Specifications, submit Soils Engineer's credentials for acceptance.
- C. Soils Engineer representative must be present to observe and perform tests at all times any soil work or earthwork activities are in progress:
 - 1. Determine suitability of materials for compacted fill, backfill and engineered fill.
 - 2. Determine preparation and placing of materials for fill, backfill and engineered fill.

3. Determine maximum density of optimum moisture content for placing and compacting materials.
4. Perform necessary field density tests to insure adequate compaction for fill, backfill and engineered fill, for each compacted layer of fill.
5. Perform necessary field inspection of different phases of earthwork.
6. Perform necessary field inspection for borrow pits.

- D. Surveyor shall verify property lines, right-of-way; establish correct levels, lines and grades; completely layout work required.

1.3 SUBMITTALS

- A. Written copy of test reports of all tests to the Architect within 48 hours.

1.4 SITE CONDITIONS

- A. Site Information:

1. Data on indicated subsurface conditions are not intended as representations of warranties of accuracy of continuity between soil borings.
2. It is expressly understood that neither the Owner nor its consultants will be responsible for interpretations or conclusions drawn by the Contractor. Data is made available solely for convenience of Contractor.
3. Additional test boring and other exploratory operations may be made by Contractor at no cost to the Owner.

- B. Existing Utilities:

1. Locate existing under ground utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.
2. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions and notify Architect. Cooperate with the Owner and utility companies in keeping respective services and facilities in operation.
3. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by Architect and then only after acceptable temporary utility services have been provided.
4. Demolish and completely remove from Owner's property existing under ground utilities indicated to be removed or required to be removed for completion of the Work. Coordinate with utility companies for shut-off services if lines are active.

- C. Explosives:

1. Explosives will not be permitted.

- D. Cut and Fill Material Quantities:

1. It is expressly understood that neither the Owner, Architect or their consultants will be responsible for quantities of cut or fill required to achieve the final grades indicated on the drawings.

2. Neither the Owner, Architect or their consultants will be responsible for the type of material existing on the site or its quality for use as a particular type of fill.
 3. The contractor is responsible for reviewing existing conditions and proposed design in detail as he determines sufficient for calculating the extent of the work and materials required.
 4. Contractor will be allowed to dig test holes during bidding. A minimum of 24 hours notice to owner of the anticipated locations and depths will be required.
 5. Contractor shall not assume a "balanced" project of cut and fill quantities.
- E. The Contractor shall consider the timing required for all earthwork for the entire project. He shall include in his bid all work and costs associated with the proper protection, procedures and materials required for the weather and environmental conditions for the time of year the work is to occur. No additional costs will be borne by the Owner, Architect or their consultants for failure by the Contractor to include these costs in the bid.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fill:

1. Earth, free of vegetation, waste, humus, rocks, boulders, stones, bricks, batts, plaster, mortar or other debris.
2. Broken concrete, block or brick shall not be used for fill.
3. Rocks larger than 3 inches in any dimension shall not be used within subgrade.
4. Plasticity index (PI) less than 35.
5. Maximum dry density according to the Standard Proctor Compaction Test, minimum 100 pcf. Modified Proctor Compaction Test may be performed in lieu of Standard Proctor Compaction Test.

B. Engineered Fill:

1. Cohesive and stable earth as described above, suitable for bearing.

C. Drainage Fill / Granular Fill:

1. Washed, evenly graded mixture of crushed stone, crushed gravel, uncrushed gravel or river gravel.
2. Contain maximum 5% by weights, passing No. 8 sieve, 100% passing 1 inch sieve.
3. Sand will not be an acceptable drainage fill/granular fill material.

D. Top Soil:

1. Natural, fertile, agricultural soil, capable of sustaining vigorous plant and lawn growth.
2. Uniform composition throughout, without admixture of subsoil.
3. Free of stones, lumps, clods, sod, live plants and their roots, sticks and other extraneous matter.

2.2 GEOTEXTILE FABRIC

- A. Equal to: "Propex GeoSynthetics", Geotex 200ST.

B. Description:

1. Woven slit film geotextile fabric.
2. Individual films shall be woven together to provide dimensional stability relative to each other.
3. Resistant to ultraviolet degradation and to biological and chemical environments normally present in soils and subsurface conditions.

C. Quality Control and Performance Standards:

1. Tensile Strength: 200 lbs (ASTM D-4632).
2. Elongation: 12% (ASTM D-4632).
3. Puncture: 90 lbs. (ASTM D-4833).
4. CBR Puncture: 700 lbs. (ASTM D-6241).
5. Mullen Burst: 400 psi (ASTM D-3786).
6. Trapezoidal Tear: 75 lbs. (ASTM D-4533).
7. UV Resistance: 70% retained at 500 hrs (ASTM D-4355).
8. Apparent Opening Size: 40 US Standard Sieve (ASTM D-4751).
9. Permittivity: .05 sec (ASTM D-4491).
10. Water Flow Rate: 4 gpm/ft² (ASTM D-4491).

PART 3 - EXECUTION

3.1 INSPECTION

- A. Contractor shall thoroughly review the existing conditions, prior to bidding or starting earthwork. This includes topography, soil materials, site access, etc. and the schedule requirements to complete the work of this section without delaying other trades or the overall project schedule.
- B. Review conditions of property adjacent to the site. Do not alter storm drainage, access, utilities etc. to the adjacent property without prior approval of Architect and Owner.

3.2 PROTECTION

- A. Maintain excavation banks and pit walls in a safe and stable conditions.
- B. Provide sheet piling, shoring and bracing as necessary to maintain excavation banks and pits, and for the protection of adjoining property, structures, pits and footings.
- C. Keep open excavation free of water, both surface and subterranean by use of pumps and earth damming around such excavations to throw surface water away from the excavation of any structure.
- D. Protect open excavation by lighted barricades or railings to prevent injury to personnel.
- E. Protect existing utilities, roads, pavement and structures.

3.3 PREPARATION

- A. Clearing:
 - 1. Clear areas as specified in Section 31 10 00.
 - 2. Remove topsoil to its full depth at construction and within grading limits.
 - 3. Stock topsoil for use in finish grading operation. Do not use for fill.
- B. Provide grade stakes; maintain lines and grades. Stakes no more than 25 ft. apart along roadways, and 50 ft. maximum along drives and paved areas.
- C. Disk to depth of 6 inches below subgrade and compact to required density prior to proof-rolling.
- D. Proofroll stripped subgrade with rubber tired roller or other means approved by Architect.
- E. Clean out unsuitable pockets and fill with earth fill, compacted.
- F. Disc or blade subgrade until uniform, and compact to specified density.
- G. Do not place fill materials until subgrade excavation has been inspected and approved by Soils Engineer and Architect.

3.4 EXCAVATION

- A. Excavate true to line and grade, level at bottom.
- B. Excavate to suitable bearing subsoil as determined by Soils Engineer.
- C. Excavations shall be to the dimensions indicated plus sufficient space to permit erection of forms, shoring, masonry, and foundations and excavation inspections.
- D. Excavation below slabs and paving shall be sufficient to permit placement of subbase materials.
- E. Foundations:
 - 1. If suitable bearing is not encountered at the depth indicated on drawings for foundations, immediately notify the Architect.
 - 2. Do not proceed further until instructions are given by the Architect and required tests are completed.
 - 3. Under no conditions are footings to be placed on soft earth or fill.
- F. Footing Trenches:
 - 1. Where soil conditions permit, footing trenches may be excavated to the exact dimension of the concrete, and side forms omitted.
 - 2. Place footings and foundations upon undisturbed, firm bottoms.
 - 3. Fill with lean concrete any excess cut under footings and foundations.
- G. Provide shoring or piling as required to protect excavation banks.

3.5 ROCK EXCAVATION

A. Definition:

1. Rock is defined as stone or hard shale in original ledge, boulders over 1/2 cu. yard in volume, masonry or concrete that cannot be broken and removed by normal job equipment (power shovel 1/2 yard capacity, scoops, bulldozers), without the use of explosives or drills.
2. This classification does not include material such as loose rock, concrete or other materials that can be removed by means other than drilling and blasting.
3. Boulders shall be removed from excavation and stockpiled for removal from site.

B. Measurement:

1. Rock shall be stripped for measurement before excavating, and no rock excavated or loosened before measurement will be allowed or paid for as rock.
2. Measurement and payment, shall be by the number of cubic yards required to bring excavation to required surface of grade shown on drawings.
3. Owner may adjust grades should excessive rock be encountered.

C. Rock Excavation Space Allowance:

1. 18 inches outside wall lines of building, or outside of concrete work for which forms are required.
2. 4 inches below and 12 inches each side of underground pipes.
3. Outside dimensions of concrete work for which no forms are required.

D. Payment:

1. No additional compensation will be made for rock removal identified in the Geotechnical Report, using a reasonable straight interpolation of the rock elevation between borings. For purposes of rock removal, "refusal" in the boring logs is assumed to be rock.
2. Geotechnical Report indicates rock will be encountered during construction.
3. Contractor shall include in the Lump Sum Base Bid or applicable Alternate Bids, the cost of rock removal required for completion of this work throughout the entire site, based upon the Geotechnical Report.
4. Bidders may visit the site and make additional underground investigations at their discretion. Coordinate schedule and locations with Architect at least 24 hours in advance.
5. For rock encountered that could not have been reasonably foreseen based upon the Geotechnical Report, do not proceed without written permission from the Architect. If approved, payment will be made upon a unit price basis, or upon a time and material basis, whichever is less.
6. Contractor shall submit timesheets, material records and receipts, and any other supportive data requested by the Architect for determination of final approved price.

E. Explosives:

1. Explosives will not be permitted.

3.6 FILLING AND BACKFILLING

- A. Fills shall be formed of satisfactory materials placed in successive horizontal layers of approximately 6 inches in loose depth for the full width of the cross section.
- B. Proof roll all areas to receive fill.
- C. Where objectionable subgrade material is encountered and removed, fill excavated area to original ground level with suitable fill as specified, and compacted as required before starting filling operation.
- D. All material entering the fill shall be free of organic matter such as leaves, grass, roots and other objectionable material.
- E. Sprinkling:
 - 1. Use sprinkling wagons, pressure distributors and other approved equipment that will sufficiently distribute the water.
 - 2. Sufficient equipment to furnish the required water shall be available at all times.
- F. Take samples at frequent intervals of all fill materials for testing, both before and after placement and compaction. From these tests, corrections, adjustments and modifications of methods, materials and moisture content will be made to construct the fill.
- G. Construction of filled areas:
 - 1. Starting layers shall be placed in the deepest portion of the fill.
 - 2. Each lift shall be disked or treated by some other mechanical means as to insure the breaking up of any existing lumps and clods.
 - 3. As placement progresses, layers shall be constructed approximately parallel to the finished grade line.
- H. The Contractor shall be responsible for the stability of fills made under the contract and shall replace any portion which has become displaced due to carelessness or negligence on the part of the Contractor.
- I. Heavy equipment for spreading fill shall not be used closer to structures than a distance equal to the height of backfill above top of footing.
- J. Backfilling shall not be done until walls are braced or shored.
- K. If fill is to be provided on both sides of walls, fill on both sides at same time.
- L. Drainage fill under floor slabs on grade shall be placed to indicated depths not less than 4 inches.
- M. Fill excess cuts under slabs with drainage fill and thoroughly compact.
- N. Dispose of all excess fill offsite.
- O. Provide acceptable fill from off site if necessary to meet finish grades indicated, at no additional cost to Owner.

3.7 COMPACTION

- A. Fill areas shall be compacted using equipment capable of compacting each lift its full depth. Moisture during compaction operations shall be maintained at optimum content.
- B. Compacting equipment shall be approved equipment of such design, weight and quantity to obtain the required density in accordance with soil compaction specification.
- C. Add moisture or aerate material as necessary to achieve optimum moisture content.
- D. Compaction operations shall be continued until the fill is compacted to not less than the following percent of the maximum dry density as determined in accordance with ASTM D698.
 - 1. 100% in fill areas supporting footings.
 - 2. 95% in non-load bearing areas within building lines.
 - 3. 95% in fill areas under paved areas.
 - 4. 85% in landscaped areas.
- E. Any areas inaccessible to a roller shall be consolidated and compacted by mechanical tampers.
- F. Operate equipment so that hardpan, cemented gravel, clay, or other chunky soil material will be broken up into small particles and become incorporated with the material in the layer.
- G. Cut areas: Disk to 6 inches below subgrade and compact to 95% of maximum dry density at optimum moisture content as determined by Standard Proctor ASTM D698.
- H. Compaction by flooding is not acceptable.
- I. Sealing: At end of each work day of filling and compaction operation, roll surface with smooth tired vehicle to leave smooth surfaced sealed to shed all water.

3.8 GRADING

- A. Furnish, operate and maintain such equipment as is necessary to control uniform layers, sections and smoothness of grade for maximum compaction and drainage.
- B. Rough Grading:
 - 1. Even grade to elevations 6 inches below finish grade topsoil elevations indicated.
 - 2. Protect all constructed items during grading operations, and repair if damaged.
 - 3. All areas in the project including excavated and filled sections and adjacent transition areas shall be reasonably smooth, compacted and free from irregular surface changes.
 - 4. The degree of finish shall be that ordinarily obtainable from either blade-grader or scraper operations, except as otherwise specified.
 - 5. The finished subgrade surface generally shall be not more than 0.10 feet above or below the established grade or approved cross-section, with due allowance for topsoil and sod where required.
 - 6. The tolerance for areas within 120 feet of the buildings shall not exceed 0.10 feet above or below the established subgrade.
 - 7. All ditches, swales and gutters shall be finished to drain readily.

8. Unless otherwise indicated on the drawings, the subgrade shall be evenly sloped to provide drainage away from the building walls in all directions at a grade not less than 1/2 inch per foot.
9. Provide roundings at top and bottom of banks and at other breaks in grade.

C. Protection:

1. Protect newly graded areas from the action of the elements.
2. Any settlement or washing that occur prior to acceptance of the work shall be repaired, and grades re-established to the required elevations and slopes.
3. Fill to required subgrade levels any areas where settlement occurs.

D. Finish Grading:

1. Proceed to finish elevations indicated.
2. Rake subsoil clean of stones and debris. Scarify to depth of 3 inches.
3. Spread stockpile topsoil over prepared subgrade to minimum depth of 6 inches, and rolled until suitable for seeding.
4. Maintain surfaces and replace additional topsoil necessary to repair erosion.

E. Continued Drainage:

1. All subgrade shall be graded to continuously drain during all phases and entire duration of construction and construction activities.
2. Contractor shall be held responsible for any/all detrimental site, soil and subsurface conditions created or altered as a result of improper drainage of soils and subgrade.

3.9 QUALITY CONTROL

A. Tests of Earthwork for Paved Areas and Slabs on Grade:

1. An average of one test per 6 inch lift of each 5,000 square feet area will be required.
2. The exact number of tests will depend on the weather, and be at the discretion of the Soil Engineer and approved by the Architect.
3. Testing firms shall test and approve all material use in fill operation.
4. Should tests indicate the required density was not attained, Contractor shall remove fill and/or backfill to depths required and as determined by the test and repeat operations until said density is attained.

B. Quality Control of Footings:

1. Footing excavation bases will be inspected by Soils Engineer.
2. If soft pockets are encountered, the undesirable material shall be removed.

C. The Architect upon the recommendation of the Testing Laboratory, will have the power of rejection of materials, equipment or operating procedures which are not suitable to produce the results specified.

D. The Contractor shall cooperate with the Testing Laboratory and shall allow the Soils Engineer ample time to conduct tests. Operation of equipment shall be discontinued when the operation interferes with testing.

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First Harrison Bank

EARTHWORK
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PART 4 - SUBMITTAL CHECK LIST

- A. Qualifications of Soils Engineer.
- B. Test results and reports of Soils Engineer/Testing Laboratory.

END OF SECTION 31 00 00

SECTION 33 11 00 - WATER DISTRIBUTION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Domestic water system pipe and fittings.
- B. Connection of domestic water system to municipal water system.
- C. All costs associated with all permits, connection fees, survey documentation, as-built drawings, third-party tapping contractor if required by utility company, overtime if utility requires service interruption outside regular work hours, and like costs and scope of work.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM D 1785 - Specification for Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120.
 - 2. ASTM D 2241 - Specification for Polyvinyl Chloride (PVC) Pressure Rated Pipe (SDR Series).
 - 3. ASTM D 3034 - Specification for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.
 - 4. ASTM D 3139 - Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.
- B. American Water Works Association (AWWA):
 - 1. AWWA C 110 - Gray Iron Fittings, 3 inches through 48 inches, for Water and Other Liquids.
 - 2. AWWA C 111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - 3. AWWA C 151 - Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
 - 4. AWWA C 504 - Rubber Seated Butterfly Valves.
 - 5. AWWA C 509 - Resilient Seated Gate Valves 3 inch through 12 inch NPS, for Water and Sewage Systems.
 - 6. AWWA C 600 - Installation of Ductile-Iron Water Mains and Appurtenances.
 - 7. AWWA C 900 - Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch for Water.

1.3 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.4 SUBMITTALS

- A. Product Data for each type of pipe, pipe fitting, valve and accessory.

PART 2 - PRODUCTS

2.1 PIPE

- A. Pipe sizes 2 inches and smaller that are installed below grade and outside building:
 - 1. HDPE pressure rated pipe flexible pipe
 - 2. Meet requirements of AWWA C901 and comply with ASTM D 2239 SDR 9 (Pressure Rated 200 psi).
- B. Pipe sizes 3 inches and larger that are installed below grade and outside building shall comply with one of the following:
 - 1. Ductile Iron Water Pipe:
 - a. In accordance with AWWA C 151.
 - b. Fittings shall be mechanical joint or push-on joint complying with AWWA C 110 or AWWA C 111 (Class 50).
 - 2. Polyvinyl Chloride (PVC) Water Pipe:
 - a. Meet requirements of AWWA C900-16 and comply with ASTM D 2241, DR 18 (Pressure Rated 235 psi).
 - b. Pipe joints shall be integrally molded bell ends in accordance with ASTM D 3139, with factory supplied elastomeric gaskets and lubricant.

2.2 GATE VALVES - 2 INCHES AND LARGER

- A. Manufacturers: Mueller Resilient Seat Gate Valves.
- B. AWWA C509, Iron Body, bronze mounted double disc, parallel seat type, non-rising stem with square nut, single wedge, resilient seat, flanged or mechanical joint ends, control rod, post indicator where noted on drawings, extension box and valve key.

2.3 BALL VALVES - 2 INCHES AND SMALLER

- A. Manufacturers: Mueller Oriseal.
- B. Brass Body, Teflon coated brass ball, rubber seats and stem seals, Tee stem pre-drilled for control rod, AWWA compression inlet end, compression outlet with electrical ground connector, with control rod, extension box and valve key.

2.4 BUTTERFLY VALVES - 2 INCHES TO 24 INCHES

- A. AWWA C 504, iron body, bronze disc, resilient replaceable seat, water or lug ends, infinite position lever handle.

2.5 ACCESSORIES

- A. Provide concrete thrust blocks using concrete to provide sufficient bearing area to transmit unbalanced thrust from bends, tees, caps, or plugs to undisturbed soil without loading undisturbed soil in excess of 2,500 PSF at 100 psi water main pressure.
- B. Tracer Wire:
 - 1. Basis of Specification: "Performance Wire and Cable, Inc.", Tracer Wire.
 - 2. Description:
 - a. Solid copper single conductor tracer wire insulated with a low density polyethylene (LDPE).
 - b. Designed to carry a radio signal to aid in the location of buried plastic piping.
 - 3. Size wire as required , 12 AWG conductor minimum.
- C. Identification:
 - 1. Tracer wire to be terminated at the service entry to the building and exposed for access.
 - a. Interior to building: terminate for water service entry at main shut off valve and for fire service entry at riser location.
 - b. Exterior to building (when interior is not feasible): terminate above ground at point of entry of piping into building.
 - 2. Tag and label wire at service point termination as follows:
 - a. Domestic Water Lines: "DOMESTIC WATER SERVICE".
 - b. Fire Protection Water Lines: "FIRE PROTECTION WATER SERVICE".

PART 3 - EXECUTION

3.1 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with fine aggregates.
- B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.
- C. Cut pipe ends square, ream pipe and tube ends and remove burrs.
- D. Remove scale and dirt, on inside and outside, before assembly.
- E. Prepare pipe for connections to equipment with flanges or unions.

3.2 BEDDING

- A. Excavate pipe trench and place bedding material. Provide trench wall shoring as required.

- B. Form and place concrete for pipe thrust restraints at any change of pipe direction and at fittings as indicated on Drawings.
- C. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 6 inches compacted depth, each layer. Place compacted bedding material to elevation of paving subgrade.

3.3 INSTALLATION - PIPE AND FITTINGS

- A. Maintain separation of water main from sanitary and storm sewer piping in accordance with state or local codes or requirements of the Health Department.
- B. Install pipe and fittings in accordance with AWWA C600.
- C. Install pipe to allow for expansion and contraction without stressing pipe or joints or as specified by pipe manufacturer.
- D. Install access fittings in accordance with local codes to permit disinfection of water system performed under this Section.
- E. Connections with Existing Pipelines: Where connections are made between new work and existing piping, make connection using suitable fittings for conditions encountered. Make each connection with existing pipe at time and under conditions which least interfere with operation of existing pipeline and in compliance with the local utility company.
- F. Form and place concrete for thrust blocks or other specified methods of retainage at each change of direction or end of pipe main.
- G. Establish elevations of buried piping in accordance with Section 31 00 00 for work in this Section. Provide 36" minimum cover.
- H. Backfill trench in accordance with Section 31 00 00.
- I. Install trace wire continuous buried 10 inches below finish grade, above pipe line. Trace wire shall be in accordance with local utilities standards.

3.4 INSTALLATION - VALVES AND HYDRANTS

- A. Install gate valves as indicated on Drawings and supported on concrete pads with valve stem vertical and plumb. Install valve boxes in a manner that will not transmit loads, stress, or shock to valve body. Center valve box over operating nut of valve vertical and plumb. Securely fit valve box together leaving cover flush with finished surface.

3.5 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Disinfect distribution system with chlorine before acceptance for domestic operation. Amount of chlorine shall be such as to provide dosage of not less than 50 parts/million. Thoroughly flush lines before introduction of chlorinating materials and after contact period of not less than 24 hours, system shall be flushed with clean water until residual chlorine content is not greater than 1.0 part/million. Open and close valves in lines being disinfected several times during contact period. After disinfection, take water sample and bacteriological test in accordance with AWWA specifications. Do not place distribution system in service until approval is obtained from applicable governing authorities.

3.6 SERVICE CONNECTIONS

- A. Provide water service connection in compliance with utility company requirements including reduced pressure backflow preventer if required and water meter with by-pass valves and sand strainer and as detailed on drawings.

3.7 FIELD QUALITY CONTROL

- A. Site Tests:
1. Compaction:
 - a. Perform inspections prior to and immediately after placing bedding.
 - b. Perform tests as specified in Section 31 00 00.
 2. Piping: Water distribution system pipe installed below grade and outside building shall be tested in accordance with following procedures:
 - a. Perform the testing of pipe materials, joints, and/or other materials incorporated into the construction of water mains and force mains to determine leakage and watertightness. All pressure pipeline shall be tested in accordance with Section 4 of AWWA C600 latest edition. In the event any state or local code requires a more stringent test, the more stringent shall apply.
 - b. Pressure Test: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing and not less than 1.25 times the working pressure at the highest point along the test section.
 - c. Leakage Test: The leakage test shall be conducted concurrently with the pressure test. Leakage is defined as the quantity of water that must be supplied into the newly laid pipeline, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipeline has been filled with water. Leakage shall not be measured by a drop in pressure in a test section over a period of time. No pipeline installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SDP}{133200}$$

L = allowable leakage, (gallons per hour)

S = length of pipe tested, (feet)

D = nominal diameter of pipe, (inches)

P = average test pressure during test, (psig)

- d. Visible Leakage: All visible leaks shall be repaired regardless of the amount of leakage.
- e. Acceptance of Installation: If any test of pipe laid in place discloses leakage greater than that specified, the Contractor shall, at his own expense, locate the leak and make repairs as necessary until the leakage is within the specified allowance. Contractor shall supply all water for testing at no additional cost to the Owner.
- f. Provide one copy of results of meter test and hydrostatic pressure test to Architect and utility company upon completion of water distribution backfilling operations.

PART 4 - SUBMITTAL CHECK LIST

- A. Product data for pipe, fittings, valves, and accessories.
- B. Meter test.
- C. Hydrostatic pressure test.

END OF SECTION 33 11 00

SECTION 33 30 00 - SANITARY SEWAGE

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish labor, materials, equipment, special tools, supervision, and services required to complete the following work indicated, noted, detailed on the drawings and specified herein.
- B. All costs associated with all permits, connection fees, survey documentation, as-built drawings, third-party tapping contractor if required by utility company, overtime if utility requires service interruption outside regular work hours, and like costs and scope of work.

1.2 REFERENCES

- A. ASTM C76 - Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
- B. ASTM D1785 - PVC Plastic Pipe, schedule 40, 80 and 120.
- C. ASTM 02665 - PVC Plastic Drain, Waste and Vent Pipe and Fittings.

1.3 SUBMITTALS

- A. Submit manufacturer's product literature.
 - 1. Published product data sheets.
 - 2. Include date on pipe materials, pipe fittings, valves and accessories.

PART 2 - PRODUCTS

2.1 SANITARY SEWER PIPING

- A. PVC Schedule 40 or 80.
- B. Fittings: PVC Schedule 40 or 80, designed for solvent welded constructions.

PART 3 - EXECUTION

3.1 EXCAVATION AND BACKFILL

- A. Refer to Section 31 00 00 for materials and quality control.

- B. Bottom of trench shall be shaped to give substantially uniform support to the lower third of all pipe. The full length of each section of pipe shall rest solidly upon pipe bed.

3.2 INSTALLATION

- A. Route piping in orderly manner and maintain gradient.
- B. Route piping to minimize excavation. Group piping whenever practical.
- C. Install piping to allow for expansion and contraction without stressing pipe, joints or connected equipment.
- D. Cleanouts shall be at grade and supported by a poured concrete box 24 inch x 24 inch x 12 inch thick.
- E. Establish invert elevations, slopes for drainage 1/8 inch per foot.
- F. Provide a minimum of 24" of cover.

3.3 SERVICE CONNECTIONS

- A. Provide new sanitary sewer services. Before commencing work check tap locations, invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage.

3.4 SUBMITTAL CHECK LIST

- A. Product Literature.

END OF SECTION 33 30 00