PROJECT MANUAL

LOYALHANNA APARTMENT RENOVATIONS

WESTMORELAND COUNTY HOUSING AUTHORITY 167 SOUTH GREENGATE ROAD GREENSBURG, PA 15601

REBID

May 6, 2019



R.W. Sleighter, LLC 1060 Eberly Way Lemont Furnace, PA 15456

RWS Project No: R17-077-04

PROJECT DIRECTORY

PROJECT: LOYALHANNA APARTMENT RENOVATIONS

OWNER: WESTMORELAND COUNTY HOUSING AUTHORITY 154 SOUTH GREENGATE ROAD, GREENSBURG, PA 15601 CONTACT: ERIK SPIEGEL, DIRECTOR OF ARCH. & ENGINEERING SERVICES; <u>ERIKS@WCHAONLINE.COM</u>

ENGINEER: R.W.SLEIGHTER 1060 EBERLY WAY LEMONT FURNACE, PA 15456 (724) 438-4010, FAX 438-4017 ROB SLEIGHTER, PRESIDENT CONTACT: DERRICK CRANE, PROJECT ENGINEER DERRICKCRANE@RWSLEIGHTER.COM

END OF PROJECT DIRECTORY

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Renovations

SECTION 00 0015

LIST OF DRAWINGS

PART 1 – GENERAL

1.01 DRAWING LIST – OVERVIEW

A. The following drawings, in reference to the Project, are indicated by an exact list that form a part of the above contract, and shall be considered a part thereof.

1.02 DRAWING LIST - GENERAL CONSTRUCTION

- A. DRAWING NO. DRAWING TITLE
 - 1. G-001 Cover Sheet
 - 2. C-001 Site Legend
 - 3. C-002 Existing Site Plan
 - 4. C-003 Site Demolition
 - 5. C-100 New Site Plan
 - 6. C-500 Site Details
 - 7. C-501 Monument Sign
 - 8. AD-101 Demolition Floor Plan
 - 9. A-101 First Floor Plan
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- 11. A-201 Elevations
- 12. A-202 Elevations
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- 14. A-501 Canopy Details
- 15. A-601 Enlarged Apartment Plan Type 'A'
- 16. A-602 Enlarged Apartment Plan Type 'B'
- 17. A-603 Enlarged Apartment Plan Type 'C'
- 18. A-604 Enlarged First Floor Plans
- 19. A-701 Casework Sections
- 20. A-702 Corridor Elevations
- 21. A-703 Typical Mounting Heights, Details and Elevations
- 22. A-801 Window and Patio Door Details
- 23. A-901 Reflected Ceiling Plans
- 24. A-902 Typical Corridor Reflected Ceiling Plan
- 25. M-001 HVAC Symbols & Abbreviations
- 26. M-101 HVAC First Floor Plan
- 27. M-102 HVAC $2^{nd}-8^{th}$ Floor plans
- 28. M-103 HVAC Roof Plans
- 29. M-301 Mechanical Enlarged Plans
- 30. P-001 Plumbing Notes, Legends and Detials
- 31. P-201 Plumbing First Floor Plan
- 32. P-202 Plumbing 2nd through 8th Floor Plans
- 33. P-203 Plumbing Penthouse Plan and Details
- 34. P-301 Plumbing Enlarged Plans
- 35. E-301 Electrical Lighting & Power Plans
- 36. E-302 Electrical Enlarged Lighting & Power Plan

1.06 SUPPLEMENTAL DRAWINGS

A. The Architect, when directed by the Owner, will furnish from time to time supplemental drawings as the work progresses for further illustration of the details of the work. But, these supplemental drawings will not include the shop drawings, all of which are to be prepared by the Contractors and submitted as hereinafter specified for approval before the work is started.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 00 0015

NOTICE TO BIDDERS

LOYALHANNA APARTMENTS RE-BID (MEP) 97-UNIT HIGH-RISE APARTMENT BUILDING RENOVATION PROJECT CITY OF LATROBE – WESTMORELAND COUNTY

- MECHANICAL CONSTRUCTION CONTRACT PA 28-8-06-2019.2.MC
- ELECTRICAL CONSTRUCTION CONTRACT PA 28-8-06-2019.3.EC
 - PLUMBING CONSTRUCTION CONTRACT PA 28-8-06-2019.4.PC

Westmoreland County Housing Authority is requesting additional construction bids for the referenced project through sealed bids which will be received by the Westmoreland County Housing Authority, until May 23, 2019 at 2:00 P.M. (eastern standard time). Bids shall be deposited at the Administrative Office of the Westmoreland County Housing Authority, 167 South Greengate Road, Greensburg PA 15601. Bids received will then be opened publically.

A **Pre-Bid Meeting** is scheduled for **May 16, 2019** at 10:00 **A.M. (eastern standard time).** Meeting location will be at the **Loyalhanna Apartments 1111 Jefferson St, Latrobe, PA 15650**. Attendance is not mandatory, but highly recommended.

Electronic Bid Documents are available for downloading at <u>www.wchaonline.com</u>. Bidders are required to register online at the <u>www.wchaonline.com</u> to view bid documents. Plan holders proposing to bid shall also register their intent to submit a bid with **Westmoreland County Housing Associates, Inc.** via email to <u>lindam@wchaonline.com</u> and <u>eriks@wchaonline.com</u> in accordance with the bid requirements.

Tribune Review - Advertisement Dates: May 9, 2019, and May 12, 2019 Pittsburgh Courier - May 15, 2018.

Westmoreland County Housing Authority,

By: Michael L. Washowich, Executive Director

DOCUMENT 00 2100

INSTRUCTIONS TO BIDDERS

AIA DOCUMENT A701-1997 INSTRUCTIONS TO BIDDERS FOR CONTRACTS

(6 PAGES)

DRAFT AIA Document A701[™] - 1997

Instructions to Bidders

for the following PROJECT:

(Name and location or address) Loyalhanna Apartment Renovations.

THE OWNER:

(Name, legal status and address) Westmoreland County Housing Authority 154 South Greengate Road, Greensburg, Pa 15601

THE ARCHITECT:

(Name, legal status and address) RW Sleighter, LLC 1060 Eberly Way Lemont Furnace PA 15456

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- 7 PERFORMANCE BOND AND PAYMENT BOND
- FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR 8

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.

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





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ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement or Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bidding Documents.

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

§ 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 as the base, to which Work may be added or from which Work may be deleted for 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 the amount of 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 The Bidder by making a Bid represents that:

§ 2.1.1 The Bidder has read and understands the Bidding Documents or Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.

§ 2.1.2 The Bid is made in compliance with the Bidding Documents.

§ 2.1.3 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 personal observations with the requirements of the proposed Contract Documents.

§ 2.1.4 The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.

ARTICLE 3 **BIDDING DOCUMENTS**

§ 3.1 COPIES

§ 3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within ten days after receipt of Bids. The cost of replacement of missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.

§ 3.1.2 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.

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

§ 3.1.4 The Owner and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

§ 3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

§ 3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to the Architect errors, inconsistencies or ambiguities discovered.

§ 3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date for receipt of Bids.

§ 3.2.3 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will 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 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. 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.

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

§ 3.3.4 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 all who are known by the issuing office to have received a complete set of Bidding Documents.

§ 3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

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

BIDDING PROCEDURES ARTICLE 4 § 4.1 PREPARATION OF BIDS

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

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

§ 4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

§ 4.1.4 Interlineations, alterations and erasures 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."

§ 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 make no 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 of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give 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.

§ 4.2 BID SECURITY

§ 4.2.1 Each Bid shall be accompanied by a bid security in the form and amount required if so stipulated in the Instructions to Bidders. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, 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. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Section 6.2.

§ 4.2.2 If a surety bond is required, it shall be written on AIA Document A310, Bid Bond, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

§ 4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

§ 4.3 SUBMISSION OF BIDS

§ 4.3.1 All copies of the Bid, the bid security, if any, 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.

§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

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

§ 4.3.4 Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

§ 4.4 MODIFICATION OR WITHDRAWAL OF BID

§ 4.4.1 A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.

§ 4.4.2 Prior to the time and date designated for receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date- and time-

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stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.

§ 4.4.3 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

§ 4.4.4 Bid security, if required, shall be in an amount sufficient for the Bid as resubmitted.

CONSIDERATION OF BIDS ARTICLE 5

§ 5.1 OPENING OF BIDS

At the discretion of the Owner, if stipulated in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

§ 5.2 REJECTION OF BIDS

The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

§ 5.3 ACCEPTANCE OF BID (AWARD)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. 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 own best interests.

§ 5.3.2 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 low 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, a properly executed AIA Document A305, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

§ 6.2 OWNER'S FINANCIAL CAPABILITY

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

§ 6.3 SUBMITTALS

§ 6.3.1 The Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, after notification of selection for the award of a Contract, furnish to the Owner through the Architect in writing:

- a designation of the Work to be performed with the Bidder's own forces; .1
- .2 names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work; and
- names of persons or entities (including those who are to furnish materials or equipment fabricated to .3 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 in writing 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, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or

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Alternate Bid to cover 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. Bonds may be secured through the Bidder's usual sources.

§ 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 If the Owner requires that bonds be secured from other than the Bidder's usual sources, changes in cost will be adjusted as provided in the Contract Documents.

§ 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 be commenced prior thereto 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. Both bonds shall be written in the amount of the Contract Sum.

§ 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 thereto a certified and current copy of the power of attorney.

ARTICLE 8 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment Is a Stipulated Sum.



DOCUMENT 00 4100

BID FORM

Westmoreland County Housing Authority Loyalhanna Apartment Renovations 1111 Jefferson Street Latrobe PA 15650

Proposal from _____, hereinafter called "Bidder".

Sirs:

Having examined the site of the work and the Contract Documents as prepared by RW Sleighter, including the Drawings, Advertisement for Bid, Instructions to Bidders, Representations, Certifications and Other Statements of Bidders, Statement of Bidders Qualifications, this Bid Form, Bid/Performance/Labor and Material Bonds; Insurance Certificate, General Conditions, Supplemental Conditions of the Contract for Construction, Non-Collusive Affidavit, Supplemental General Conditions, Form of Contract, and the Technical Specifications, the undersigned submits this bid and encloses herewith a Bid Guarantee in the proper amount of 10% of the bid and payable to the Westmoreland County Housing Authority. Failure to furnish approved bonds, and execute the contract within ten (10) calendar days from issuance of the award, the bid guarantee will be forfeited. Should the owner fail to make an award on this contract through no fault or failure on the part of this bidder, then the owner will return the Bid Guarantee to the Bidder.

It is hereby certified that the undersigned is the only person(s) interested in this bid as principal, and that the bid is made without collusion with any person, firm or corporation. Bidder hereby agrees to execute the contract and furnish surety company bonds in the following amounts within ten (10) calendar days after mailing by the owner of notice of award.

- Performance Bond in the amount of one hundred percent (100%) of the contract a. price.
- Labor and Materialmen's/Payment Bond in the amount of one hundred percent b. (100%) of the contract price, conditioned that the contractor will promptly pay for all material and labor supplied or performed in the prosecution of all work, whether or not the material and labor enter into and become component parts of the project.

Bidder further agrees to begin paper work and site organization work, scheduling, assembling shop drawings and all other work possible within ten (10) calendar days after date of receipt of the executed contract. It is understood and agreed that this proposal is effective for acceptance by the Owner for a period of sixty (60) days.

Bidder agrees that, if awarded the contract, he will furnish and deliver all materials, tools, equipment, tests and transportation, secure all permits and licenses, do and perform all labor, superintendence, and all means of construction; pay all fees and do incidental work; and to execute, construct and finish in an expeditious, substantial, and workmanlike manner, in

accordance with the drawings and specifications to the complete satisfaction and acceptance of the owner for the above captioned contract, and for the price hereinafter stated.

Bidder submits this bid with the understanding that all work shall be completed within 275 calendar days for the base bid. Refer to Section 01 3213 Scheduling and Phasing for separate time limits for Building Demolition and Building/Site Construction.

BASE BID GENERAL CONSTRUCTION

For all work indicated on the Contract Documents herein, the sum of:

<u>(\$_____), ____</u>

UNIT PRICES – Refer to Section 01 2200 Unit Prices

Base Repair

(\$_____), for each square yard of Base Repair performed, including labor and material.

Paving Membrane

(\$_____), for each square foot of Paving Membrane installed, including labor and material.

ALTERNATE BID ITEMS - Refer to Section 01 2300 Alternates

Alternate GC1 - Monument Sign State the amount to ADD to the base bid amount to monument sign and associated landscaping.	(\$ perform the construction of the	_) he
Alternate GC2 - Stamped Concrete Overlay State the amount to ADD to the base bid amount to	(\$ install a stamped concrete or	_) verlay
on the existing concrete below the front canopy (+/-	500 sf).	
Alternate GC3 – Benches	<u>(</u> \$	_)
State the amount to ADD to the base bid to install the	wo new benches at the front of	anopy.
Alternate GC4 - Mailbox Concrete Pad	<u>(</u> \$	_)

State the amount to install a new concrete pad and relocate the existing mailboxes.

	Alternate GC5 - Exterior doors and windows	(\$)
	State the amount to DEDUCT from the base bid a the exterior doors and windows.	mount to remove the construc	tion of
	Alternate GC6 - Common Access Hallway/		
	Elevator Lobby Modernization and Renovation	s (\$	_)
	State the amount to DEDUCT from the base bid a the Common Access Hallway/Elevator Lobby Mod	mount to remove the construc lernization and Renovations.	tion of
	Alternate GC7 – Site Construction	(\$	_)
	State the amount to DEDUCT from the base bid a indicated on the Civil Drawings C-001 through C-5	mount to remove the site cons 501	truction
	Alternate GC8 – Countertop above toilet	(\$	_)
	State the amount to DEDUCT from the base bid a the toilet as indicated on drawings A-601, A-602, a	mount to remove the counterto and A-603	op above
	Alternate GC9 – Window Blinds	(\$)
	State the amount to ADD to the base bid amount t windows.	to provide window blinds at all	
BAS	E BID EXTERIOR RESTORATION CON	ISTRUCTION	

For all work indicated on the Contract Documents herein, the sum of:

<u>(\$____), ___</u>

UNIT PRICES – Refer to Section 01 2200 Unit Prices

Balcony Concrete Repair

(\$_____), for each square foot of Balcony Concrete Repair performed, including labor and material.

ALTERNATE BID ITEMS - Refer to Section 01 2300 Alternates

ERC1 – EIFS Cleaning & Coating, Masonry Cleaning and Sealing

(\$)
\ +	<u> </u>

State the amount to DEDUCT from the base bid amount to remove EIFS Cleaning and Sealing, and Brick Masonry Cleaning and Sealing.

ERC2 - Balcony Railings

(\$_____)

State the amount to DEDUCT from the base bid amount to remove the Electrostatic painting of the balcony railings. As part of this deduct, the contractor shall include in the base bid, the amount to clean all of the balcony railings.

ERC3 - Balconies

(\$_____)

State the amount to DEDUCT from the base bid amount to remove the cleaning and coating of the balconies.

BASE BID PLUMBING CONSTRUCTION

For all work indicated on the Contract Documents herein, the sum of:

<u>(\$_____), ____</u>

ALTERNATE BID ITEMS – Refer to Section 01 2300 Alternates

Alternate PC1 – 2" Gas Service

Deduct cost to DEDUCT the replacement of the 2" underground gas service from the meter to the 1st floor mechanical room; Delete replacement of the 2" gas riser from 1st floor mechanical room to 8th floor; Provide gas pressure regulators at the Emergency Generator and in the mechanical penthouse.

(\$

Alternate PC2 – Water Heaters

<u>(</u>\$

DEDUCT cost to provide two 285 mbh water heaters in lieu of the 400 mbh water heaters. The 2" gas line serving the existing RTU from the 1st floor mechanical room to the 8th floor shall remain. Contractor shall offset the existing 2" gas line at the 8th floor and serve the new RTU. Contractor shall run an additional 2" gas line from the 1st floor mechanical room to the water heaters in the penthouse.

Alternate PC3 – Apartment Ball Valve Shutoff	(\$)
--	------

DEDUCT cost to provide Ball Valve shutoffs and fire rated access panels at each apartment as indicated on drawing P-201. Keep Ball Valve Shutoff at the top of each riser in the base bid.

BASE BID MECHANICAL CONSTRUCTION

For all work indicated on the Contract Documents herein, the sum of:

<u>(\$),</u>		
ALTERNATE BID ITEMS – Refer to S	Section 01 2300 Alternates	
Alternate MC1	<u>(</u> \$)
Provide alternate deduct price for unit: 1. Natural Gas furnace turndo 2. Natural Gas Furnace warra	MUA-1 with the following revisions own of 10 to 1. anty of 10 years.	to the specified
Alternate MC2	<u>(</u> \$)
Provide alternate deduct to remov of work.	ve the MAU-1 and all associated wo	ork from the scope
Bidder's Name:		
Bidder's Signature:		

BASE BID ELECTRICAL CONSTRUCTION

For all work indicated on the Contract Documents herein, the sum of:

<u>(\$_____), ____</u>

ALTERNATE BID ITEMS – Refer to Section 01 2300 Alternates

Alternate EC1 - Flag Pole Lighting	<u>(</u> \$)
State the amount to ADD to the base bid amo wiring.	unt to install the flag pole lig	hting, conduits, and
Deduct Alternate EC2	<u>(</u> \$)
Common Access Hallway/Elevator Lob	by Modernization and R	enovations

State the amount to DEDUCT from the base bid amount to remove the electrical construction work in the Common Access Hallway/Elevator Lobby Modernization and Renovations.

Receipt of the following addenda and due consideration of their contents in the preparation of this bid is hereby acknowledged:

Addendum No.	Contract No.	Dated

Failure of Bidder to acknowledge receipt of addenda may be sufficient cause for rejection of his bid.

Bidder's Name:	 	
Bidder's Signature:	 	

Date:_____

END OF DOCUMENT 00 0300

DOCUMENT 00 4100

BID FORM

Westmoreland County Housing Authority Loyalhanna Apartment Renovations Re-Bid 1111 Jefferson Street Latrobe PA 15650

Proposal from _____, hereinafter called "Bidder".

Sirs:

Having examined the site of the work and the Contract Documents as prepared by RW Sleighter, including the Drawings, Advertisement for Bid, Instructions to Bidders, Representations, Certifications and Other Statements of Bidders, Statement of Bidders Qualifications, this Bid Form, Bid/Performance/Labor and Material Bonds; Insurance Certificate, General Conditions, Supplemental Conditions of the Contract for Construction, Non-Collusive Affidavit, Supplemental General Conditions, Form of Contract, and the Technical Specifications, the undersigned submits this bid and encloses herewith a Bid Guarantee in the proper amount of 10% of the bid and payable to the Westmoreland County Housing Authority. Failure to furnish approved bonds, and execute the contract within ten (10) calendar days from issuance of the award, the bid guarantee will be forfeited. Should the owner fail to make an award on this contract through no fault or failure on the part of this bidder, then the owner will return the Bid Guarantee to the Bidder.

It is hereby certified that the undersigned is the only person(s) interested in this bid as principal, and that the bid is made without collusion with any person, firm or corporation. Bidder hereby agrees to execute the contract and furnish surety company bonds in the following amounts within ten (10) calendar days after mailing by the owner of notice of award.

- Performance Bond in the amount of one hundred percent (100%) of the contract a. price.
- b. Labor and Materialmen's/Payment Bond in the amount of one hundred percent (100%) of the contract price, conditioned that the contractor will promptly pay for all material and labor supplied or performed in the prosecution of all work, whether or not the material and labor enter into and become component parts of the project.

Bidder further agrees to begin paper work and site organization work, scheduling, assembling shop drawings and all other work possible within ten (10) calendar days after date of receipt of the executed contract. It is understood and agreed that this proposal is effective for acceptance by the Owner for a period of sixty (60) days.

Bidder's Name:_____

Bidder's Signature:

Bidder agrees that, if awarded the contract, he will furnish and deliver all materials, tools, equipment, tests and transportation, secure all permits and licenses, do and perform all labor, superintendence, and all means of construction; pay all fees and do incidental work; and to execute, construct and finish in an expeditious, substantial, and workmanlike manner, in accordance with the drawings and specifications to the complete satisfaction and acceptance of the owner for the above captioned contract, and for the price hereinafter stated.

Bidder submits this bid with the understanding that all work shall be completed within 275 calendar days for the base bid. Refer to Section 01 3213 Scheduling and Phasing for separate time limits for Building Demolition and Building/Site Construction.

BASE BID PLUMBING CONSTRUCTION

For all work indicated on the Contract Documents herein, the sum of:

<u>(\$_____), ____</u>

BASE BID MECHANICAL CONSTRUCTION

For all work indicated on the Contract Documents herein, the sum of:

<u>(\$_____), _____</u>

ALTERNATE BID ITEMS – Refer to Article 4 of the Instructions to bidders.

Alternate MC1

(\$)

Provide alternate deduct price for MUA-1 with the following revisions to the specified unit:

- 1. Natural Gas furnace turndown of 10 to 1.
- 2. Natural Gas Furnace warranty of 10 years.

Alternate MC2

(\$

Provide alternate deduct to remove the MAU-1 and all associated work from the scope of work.

BASE BID ELECTRICAL CONSTRUCTION

For all work indicated on the Contract Documents herein, the sum of: (\$),_____ **ALTERNATE BID ITEMS** – Refer to Article 4 of the Instructions to bidders. (\$) Alternate EC1 - Flag Pole Lighting State the amount to ADD to the base bid amount to install the flag pole lighting, conduits, and wiring. Deduct Alternate EC2 (\$) Common Access Hallway/Elevator Lobby Modernization and Renovations State the amount to DEDUCT from the base bid amount to remove the electrical construction work in the Common Access Hallway/Elevator Lobby Modernization and Renovations. Receipt of the following addenda and due consideration of their contents in the preparation of this bid is hereby acknowledged: Addendum No. Contract No. Dated Failure of Bidder to acknowledge receipt of addenda may be sufficient cause for rejection of his bid.

Bidder's Name:______ Bidder's Signature:_____ Date:

END OF DOCUMENT 00 0300

DOCUMENT 00 4313

BID BOND

AIA DOCUMENT A310-2010 BID BOND

(2 PAGES)



AFT AIA[®] Document A310[™] - 2010

(Name, legal status and principal place

Bid Bond

CONTRACTOR:

>>

(Name, legal status and address)

~	» «
u	>>

OWNER:

(Name, legal status and address) Westmoreland County Housing Authority 154 South Greengate Road. Greensburg, Pa 15601

BOND AMOUNT: \$ « »

PROJECT:

(Name, location or address, and Project number, if any) Loyalhanna Apartment Renovations 1111 Jefferson Street Latrobe Pa 15650

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

SURETY:

« »« »

« »

of business)

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

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

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.

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.





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Signed and sealed this « » day of « », « »

(Witness)

(Witness)

« » (Contractor as Principal) (Seal) « » (Title) « » (Surety) (Seal) « » (Title)

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SECTION 00 4323 ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Description of Alternates.

1.02 RELATED REQUIREMENTS

- A. Document 00 2113 Instructions to Bidders: Instructions for preparation of pricing for Alternates.
- B. Document 00 5200 Agreement Form: Incorporating monetary value of accepted Alternates.

1.03 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.
- C. Provide costs for these items to be ADDED to or SUBTRACTED from the Base Bid Amount, refer to the Bid Form.

1.04 SCHEDULE OF ALTERNATES

GENERAL CONSTRUCTION

Alternate GC1 - Monument Sign

State the amount to ADD to the base bid amount to perform the construction of the monument sign and associated landscaping.

Alternate GC2 - Stamped Concrete Overlay

State the amount to ADD to the base bid amount to install a stamped concrete overlay on the existing concrete below the front canopy (+/- 500 sf).

Alternate GC3 – Benches

State the amount to ADD to the base bid to install two new benches at the front canopy.

Alternate GC4 - Mailbox Concrete Pad

State the amount to ADD to the base bid to install a new concrete pad and relocate the existing mailboxes.

Alternate GC5 – Roof Edge Coping

State the amount to ADD to the base bid to install a new roof edge metal coping.

Alternate GC6 - Exterior doors and windows

State the amount to DEDUCT from the base bid amount to remove the construction of the exterior doors and windows.

Alternate GC7 - Common Access Hallway/Elevator Lobby Modernization and Renovations

State the amount to DEDUCT from the base bid amount to remove the construction of the Common Access Hallway/Elevator Lobby Modernization and Renovations.

Alternate GC8 – Site Construction

State the amount to DEDUCT from the base bid amount to remove the site construction indicated on the Civil Drawings C-001 through C-501

Alternate GC9 – Countertop above toilet

State the amount to DEDUCT from the base bid amount to remove the countertop above the toilet as indicated on drawings A-601, A-602, and A-603

EXTERIOR RESTORATION CONSTRUCTION

ERC1 – EIFS Cleaning & Coating, Masonry Cleaning and Sealing

State the amount to DEDUCT from the base bid amount to remove EIFS Cleaning and Sealing, and Brick Masonry Cleaning and Sealing.

ERC2 - Balcony Railings

State the amount to DEDUCT from the base bid amount to remove the powder coating of the balcony railings. As part of this deduct, the contractor shall include in the base bid, the amount to clean all of the balcony railings.

ERC3 - Balconies

State the amount to DEDUCT from the base bid amount to remove the cleaning and coating of the balconies.

MECHANICAL CONSTRUCTION

Alternate MC1

Provide alternate deduct price for MUA-1 with the following revisions to the specified unit:

- 1. Natural Gas furnace turndown of 10 to 1.
- 2. Natural Gas Furnace warranty of 10 years.

Alternate MC2

Provide alternate deduct to remove the MAU-1 and all associated work from the scope of work.

PLUMBING CONSTRUCTION

None

ELECTRICAL CONSTRUCTION

Alternate EC1 - Flag Pole Lighting

State the amount to ADD to the base bid amount to install the flag pole lighting, conduits, and wiring.

Alternate EC2 - Common Access Hallway/Elevator Lobby Modernization and Renovations

State the amount to DEDUCT from the base bid amount to remove the electrical construction work in the Common Access Hallway/Elevator Lobby Modernization and Renovations.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 00 4514 NON-COLLUSION AFFIDAVIT OF CONTRACTOR

State of		
County of		
(Name)		being first duly sworn, states that:
(1) He is	(owner, partner, office, representative agent)	
Of		(Company),

the Bidder that has submitted that attached Bid;

- (2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;
- (3) Such Bid is genuine and is not a collusive or sham Bid;
- (4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affidavit, has, in any way, colluded, conspired, connived, or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person, to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit, or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Westmoreland County Housing Authority or any person interested in the proposed Contract; and,
- (5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit.
| | | | /s/ |
|--|---------|-----------------|-------|
| | | | Title |
| Subscribed and sworn to before me this | day of | , 2017. | |
| By:
Notary Public | My Comm | ission Expires: | |

END OF SECTION 0 04514

SECTION 00 4515 NON-DISCRIMINATION AFFIDAVIT

agrees as follows:

, hereinafter referred to as the CONTRACTOR,

- 1. The CONTRACTOR shall not discriminate against any employee, applicant for employment, independent contractor, or any other person because of race, color, religious creed, ancestry, national origin, age, or sex. The CONTRACTOR shall take affirmative action to ensure that applicants are employed, and that employees or agents are treated, during employment, without regard to their race, color, religious creed, ancestry, national origin, age or sex. Such affirmative action shall include, but is not limited to, the following: Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training. The CONTRACTOR shall post in conspicuous places, available to all employees, agents, applicants for employment, and other persons a notice to be provided by the contracting agency setting forth the provisions of the non-discrimination clause.
- 2. The CONTRACTOR shall, in advertisement or requests for employment placed by it or on its behalf, state that all qualified applicants will receive consideration for employment without regard to race, color, religious creed, ancestry, national origin, age or sex.
- 3. The CONTRACTOR shall send each labor union or worker's representative with which it has a collective bargaining agreement or other contract or understanding, a notice advising said labor union or workers' representative of its commitment to this non-discrimination clause. Similar notice shall be sent to every other source of recruitment regularly utilized by the CONTRACTOR.
- 4. It shall be no defense to a finding of non-compliance with the Contract Compliance Regulation Commission or this non-discrimination clause that the CONTRACTOR had delegated some of its employment practices to any union, training program, or other source or recruitment which prevents it from meeting its obligations. However, if the evidence indicates that the CONTRACTOR was not on notice of the third-party discrimination or made a good faith effort to correct it, such factor shall be considered in mitigation in determining appropriate sanctions.
- 5. Where the practice of a union or any training program or other source of recruitment will result in the exclusion of minority group persons, so that the CONTRACTOR will be unable to meet its obligations under the Contract Compliance Regulations issued by the Pennsylvania Human Relations Commission or this non-discrimination clause, The CONTRACTOR shall then employ and fill vacancies through other non-discriminatory employment procedures.
- 6. The CONTRACTOR shall comply with the Contract Compliance Regulations of the Pennsylvania Human Relations Commission, 16 PA Code Chapter 49 and with all state and federal laws prohibiting discrimination in hiring or employment opportunities. In the event of the CONTRACTOR's noncompliance with the non-discrimination clause of this CONTRACT, or with any such laws, this CONTRACT may, after hearing and adjudication, be terminated or suspended, in whole or in part, and the CONTRACTOR may be declared temporarily ineligible for further contracts and other such sanctions may be imposed and remedies invoked as provided by the Contract Compliance Regulations.

- 7. CONTRACTOR shall furnish all necessary employment documents and records to, and permit access to its books, records, and accounts by the contracting agency, the Office of Administration, Bureau of Affirmative Action, and the Human Relations Commission for purposes of investigation to ascertain compliance with the provisions of the Contract Compliance Regulations, pursuant to 49.35 of the regulations cited above (relating to information concerning compliance by contractors). If the CONTRACTOR does not possess documents or records reflecting the necessary information requested, it shall furnish such information on reporting forms supplied by the contracting agency, the Bureau of Affirmative Action or the COMMISSION.
- 8. The CONTRACTOR shall actively recruit minority subcontractor or subcontractors with substantial minority representation among their employees.
- 9. The CONTRACTOR shall include the provisions of the non-discrimination clause in every subcontract, so that such provisions will be binding upon each subcontractor.
- The terms used in this non-discrimination clause shall have the same meaning as in the Contract Compliance Regulations issued by the Pennsylvania Human relations Commission, 16 PA Code Chapter 49.
- 11. The CONTRACTOR obligations under this clause are limited to the CONTRACTOR's facilities within Pennsylvania, or, where the contract is for the purchase of goods manufactured outside of Pennsylvania, the facilities at which such goods are actually produced.

CONTRACTOR:	WITNESS:	
Ву:		
State of, County of		
Subscribed to and sworn to before me this	day of, 20 <u>17.</u>	
Notary Public:		
My Commission Expires:		

END OF SECTION 00 4515

SECTION 00 4517 AFFIDAVIT ACCEPTING PROVISIONS OF THE WORKMEN'S COMPENSATION ACTS

State of _____ County of _____ ____, being duly sworn according to law, deposes and says that he/she is authorized to execute this affidavit on behalf of the below designated Contractor, that said Contractor is familiar with and has accepted the provisions of the Workmen's Compensation Act of 1915 or the Commonwealth of Pennsylvania with its supplements and amendments, including the amendments set forth in Act 44 of 1993, and that said Contractor has insured its liability thereunder, in accordance with the terms of said Act, with the following insurance company Policy # _____ (Insurance company) The undersigned further acknowledges that said Contractor is aware of its obligation not to subcontract all or any part of the Work, if awarded, unless each subcontractor has presented proof of Workmen's Compensation Insurance, and that the Contractor and all subcontractors must provide proof of Workmen's Compensation Insurance to the Owner, which insurance shall be effective for the duration of the Work. In the event that the Owner shall receive notice that any such insurance has been canceled or terminated, the Owner shall issue a Stop Work Order as required by law. (Name of Contractor) By: _____ Signature Sworn and subscribed to before me this day of , 2017. Notary Public My Commission Expires: _____ END OF SECTION 00 4517 AFFIDAVIT ACCEPTING PROVISIONS R17-077-04 WCHA Loyalhanna 00 4517 - 1 Apartment Renovations OF THE WORKMEN'S COMPENSATION

ACTS

DOCUMENT 00 4600

CONTRACTORS QUALIFICATIONS STATEMENT

AIA DOCUMENT A305-1986 CONTRACTORS QUALIFICATIONS STATEMENT

(4 PAGES)



Contractor's Qualification Statement

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

SUBMITTED TO: « »	
ADDRESS: « »	ADDITIONS AND DELETIONS: The author of this document
SUBMITTED BY: « »	needed for its completion. The author may also have
NAME: « »	original AIA standard form. An Additions and Deletions
ADDRESS: « »	<i>Report</i> that notes added information as well as revisions to the standard
PRINCIPAL OFFICE: « »	form text is available from the author and should be
[« »] Corporation	reviewed. This document has important
[« »] Partnership	legal consequences. Consultation with an
[« »] Individual	attorney is encouraged with respect to its completion
[«»] Joint Venture	or modification. This form is approved and
[«»] Other «»	recommended by the American Institute of Architects (AIA) and The Associated
NAME OF PROJECT: (<i>if applicable</i>) « »	General Contractors of America (AGC) for use in
TYPE OF WORK: (file separate form for each Classification of Work)	evaluating the qualifications of contractors. No
[« »] General Construction	submitting party or
[«»] HVAC	information is made by AIA
[« »] Electrical	di Add.
[« »] Plumbing	
[« »] Other: (Specify) « »	
§ 1 ORGANIZATION	

§ 1.1 How many years has your organization been in business as a Contractor? « »

§ 1.2 How many years has your organization been in business under its present business name? « »

§ 1.2.1 Under what other or former names has your organization operated?

§ 1.3 If your organization is a corporation, answer the following:

§ 1.3.1 Date of incorporation: « »

« »

§ 1.3.2 State of incorporation: « »

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prohibited and constitutes a violation of copyright laws as set forth in the footer of

	 § 1.3.3 President's name: « » § 1.3.4 Vice-president's name(s) 	
	« »	
	§ 1.3.5 Secretary's name: « » § 1.3.6 Treasurer's name: « »	
§ 1.4 If	 your organization is a partnership, answer the following: § 1.4.1 Date of organization: « » § 1.4.2 Type of partnership (if applicable): « » § 1.4.3 Name(s) of general partner(s) 	
§ 1.5 If	 « » your organization is individually owned, answer the following: § 1.5.1 Date of organization: « » § 1.5.2 Name of owner: 	U
§ 1.6 If	« » the form of your organization is other than those listed above, describe it and name	the principals:
 § 2 LIC § 2.1 Li indicate 	ENSING st jurisdictions and trade categories in which your organization is legally qualified t registration or license numbers, if applicable.	o do business, and
« »		
§ 2.2 Li	st jurisdictions in which your organization's partnership or trade name is filed.	
§ 3 EXF § 3.1 Li	PERIENCE st the categories of work that your organization normally performs with its own for	ces.
« »		
§ 3.2 CI	laims and Suits. (If the answer to any of the questions below is yes, please attach de § 3.2.1 Has your organization ever failed to complete any work awarded to it?	etails.)
	« »	
	§ 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending o your organization or its officers?	or outstanding against
	« »	
	§ 3.2.3 Has your organization filed any law suits or requested arbitration with regard contracts within the last five years?	rd to construction
	« »	
§ 3.3 W another	Tithin the last five years, has any officer or principal of your organization ever been a organization when it failed to complete a construction contract? (If the answer is you	an officer or principal of es, please attach details.)

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« »

§ 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

« »

§ 3.4.1 State total worth of work in progress and under contract: « » § 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces. « » § 3.5.1 State average annual amount of construction work performed during the past five years: « » § 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization. « » § 4 REFERENCES § 4.1 Trade References: « » § 4.2 Bank References: « » § 4.3 Surety: § 4.3.1 Name of bonding company: « » § 4.3.2 Name and address of agent: « » § 5 FINANCING § 5.1 Financial Statement. § 5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items: Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses); Net Fixed Assets; Other Assets:

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

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Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

§ 5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

		« »	
		§ 5.1.3 Is the attached financial statement for the identical organization named or	n page one?
		« »	
		§ 5.1.4 If not, explain the relationship and financial responsibility of the organiza statement is provided (e.g., parent-subsidiary).	ation whose financial
		« »	
§	5.2	Will the organization whose financial statement is attached act as guarantor of the c	ontract for construction?
«	»		
ş Ş	6 S 6.1	SIGNATURE Dated at this « » day of « » « »	
		Name of Organization: « »	4
		By: « »	
		Title: « »	
§	6.2		
«	»		
M as	I « > s not	» being duly sworn deposes and says that the information provided herein is true and t to be misleading.	d sufficiently complete so

Subscribed and sworn before me this « » day of « » « »

Notary Public: « »

My Commission Expires: « »



4

DOCUMENT 00 5200

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

AIA DOCUMENT A101-2017 STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

(8 PAGES)

DRAFT 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*)

«<u>Westmoreland County Housing Authority</u> 154 South Greengate Road, <u>Greensburg, Pa 15601</u> »« »

« »

« »

« »

and the Contractor:

(Name, legal status, address and other information)

« »« » « » « »

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

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



The Owner and Contractor agree as follows.

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.

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.



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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



2

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be: *(Check one of the following boxes.)*

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

« »

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

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

§ 3.3 Substantial Completion

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

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

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- [« »] 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	

3

§ 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.*)

	· · ·
	NI
§ 4.3 Allowances, if any, included in the Contract Sum: (<i>Identify each allowance.</i>)	
Item Price	
§ 4.4 Unit prices, if any:	W/
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price	e will be applicable.)
Item Units and Limitations Pric	ce per Unit (\$0.00)
δ 45 Liquidated damages if any:	
(Insert terms and conditions for liquidated damages, if any.)	
	\frown
« »	
§ 4.6 Other:	
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Con	itract Sum.)
« »	

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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 A201TM–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:

- That portion of the Contract Sum properly allocable to completed Work; .1
- .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.)

« »

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§ 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.)

- « »
- « »
- « »

« »

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§ 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.

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§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101TM– 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 A101TM-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 E203TM–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.)



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

[« »] AIA Document E204TM-2017, Sustainable Projects Exhibit, dated as indicated below: (Insert the date of the E204-2017 incorporated into this Agreement.)

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« »

This

« (P

[« »] The Sustainability Plan:

		Title	3	Da	te	Page	es	
	[«	»]	Supplementary and other Condi	tions	of the Contract:		Π	
		Doc	ument	Tit	le	Date		Pages
.9	Oth (Lis Doc sam requ proj doc	er do st her cume uple j uiren posa	becuments, if any, listed below: be any additional documents that ant $A201^{\text{TM}}2017$ provides that the forms, the Contractor's bid or pri- nents, and other information furn ls, are not part of the Contract L ints should be listed here only if it	are in ne adv coposc nishea Docum ntendo	ntended to form part of th vertisement or invitation al, portions of Addenda r l by the Owner in anticip nents unless enumerated ed to be part of the Contr	he Cor to bid, elatin ation in this ract D	ntract Docum , Instruction g to bidding of receiving s Agreement. Documents.)	nents. AIA s to Bidders, or proposal bids or Any such
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							Δ	
OWNER (St	ignat	ure)		_	CONTRACTOR (Signat	ure)		
« »« »				_	« »« »			
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DOCUMENT 00 6113

PAYMENT BOND

AIA DOCUMENT A312-2010 PAYMENT BOND

(4 PAGES)



AFT 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) Westmoreland County Housing Authority 154 South Greengate Road, Greensburg, Pa 15601

CONSTRUCTION CONTRACT

D	ate:	« »			
A	mou	ınt: \$		»	
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BOND

Date:			
(Not earlier than Construction	Contra	ct Date)	
« » Amount: \$ « »			
Modifications to this Bond:	« »	None	Γ
CONTRACTOR AS PRINCIPAL		SUR	ΞΤΥ

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)	Company:
------------------	----------

(Corporate Seal)

See Section

18

«»

Signature:		Signature:	
Name and	« »« »	Name and	« »« »
Title:		Title:	

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



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.

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.





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§ 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,

- have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy .1 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.

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§ 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:

- the name of the Claimant; .1
- the name of the person for whom the labor was done, or materials or equipment furnished; .2
- a copy of the agreement or purchase order pursuant to which labor, materials or equipment was .3 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.

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§ 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.

pace is provided CONTRACTOR AS	below for ada PRINCIPAL	itional signatures of add	ed parties, other thar SURETY	n those appearing on the cover p
Company:		(Corporate Seal)	Company:	Corporate S
ignature:			Signature:	
ame and Title:	« »« » « »		Name and Title: Address:	« »« » « »
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DOCUMENT 00 6276

APPLICATION AND CERTIFICATION FOR PAYMENT AND CONTINUATION SHEET

AIA DOCUMENT G702 & G703-1992 APPLICATION AND CERTIFICATION FOR PAYMENT AND CONTINUATION SHEET

(2 PAGES)

DRAFT AIA[®] Document G702[™] - 1992

Application and Certificate for Payment

		-					
TO OWNER:	Westmoreland County Housing Authori	PROJECT:	WCHA Loyalhanna	Apartment Renovations	APPLICATION NO:	001	Distribution to:
	Westmoreland County Housing		Latrobe, PA				OWNER:
	Authority				PERIOD TO:		ARCHITECT :
	154 South Greengate Road,				CONTRACT FOR:	General Construction	CONTRACTOR:
FROM		VIA			CONTRACT DATE:		FIELD :
CONTRACTOR:		ARCHITECT:	RW Sleighter, LLC.		PROJECT NOS:	R17 / 077 / 04	OTHER:
			1060 Ebelry Way				
			Lemont Furnace PA	15456			
CONTRACTO	R'S APPLICATION FOR PAY	MENT		The undersigned Contractor	certifies that to the bes	st of the Contractor's knowle	dge, information and
	f			belief the Work covered by	this Application for Pa	yment has been completed in	h accordance with the
Continuation Sheet	AIA Document G703 is attached	on with the Contract.		Contract Documents, that al	amounts have been pa	received from the Owner of	ork for which previous
	ATA Document G705, is attached.		00.02	payment shown herein is no	w due	received from the Owner, a	nu that current
			\$0.00		w due.		
2. NET CHANGE DI C	$\mathbf{O} \mathbf{D} \mathbf{A} \mathbf{T} \mathbf{E} (\mathbf{I} \text{ in a } 1 \pm 2)$		\$0.00			Deter	
	TO & STOPED TO DATE (Column G on $G70$	3)	\$0.00	Бу.		Date.	
5 RETAINAGE			\$0.00	State of			
a. 0 % of (Completed Work			County of			
(Column $D + F$	E on G703: $$0.00 =$	\$0.00		Subscribed and sworn to be	fore		
b. 0 % of S	Stored Material		-	me this	day of		
(Column F on	G703: \$0.00)=	\$0.00		Notary Public:			
Total Retainage (Lin	es 5a + 5b or Total in Column I of G703).		\$0.00	My Commission expires:			
				ARCHITECT'S CER	TIFICATE FOR	PAYMENT	
6. IOTAL EARNED LE	SS RETAINAGE		\$0.00				
(Line 4 Less Li	INE 5 Total)		¢0.00	this application the Archite	tract Documents, based	on on-site observations and r that to the best of the Arcl	the data comprising
(Ling 6 from m	ertificates for patment		\$0.00	information and belief the V	Vork has progressed as	indicated, the quality of the	Work is in accordance
			¢0.00	with the Contract Document	ts, and the Contractor is	s entitled to payment of the	
			\$0.00	AMOUNT CERTIFIED.			
(Line 3 less Lin		\$0.00		AMOUNT CERTIFIED			\$0.00
(Enic 5 less En		\$0.00	-	(Attach explanation if amou	nt certified differs from	the amount applied Initial	all figures on this
				Application and on the Con	tinuation Sheet that are	e changed to conform with t	he amount certified.)
CHANGE ORDER S	SUMMARY	ADDITIONS	DEDUCTIONS	ARCHITECT:			,,
Total changes approx	ved in previous months by Owner	\$0.00	\$0.00	Bv [.]		Date:	
Total approved this N	Month	\$0.00	\$0.00	This Certificate is not negot	iable. The AMOUNT C	CERTIFIED is payable only	to the Contractor
	TOTALS	\$0.00	\$0.00	named herein. Issuance, pay	ment and acceptance of	f payment are without prejud	lice to any rights of the
NET CHANGES by	Change Order		\$0.00	Owner or Contractor under	this Contract.	_ · · · ·	

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DRAFT AIA[®] Document G703[™] - 1992

Continuation Sheet

AIA Document, G702 TM –1992, Application and Certification for Payment, or G736 TM –2009,					APPLICATION NO:		001		
Project Application and Project Certificate for Payment, Construction Manager as Adviser Edition,					APPLICATION DATE:				
containing Contractor's signed certification is attached.									
In tabulations below, amounts are in US dollars.						PERIOD TO:			
Use Column I on Contracts where variable retainage for line items may apply.					ARCHITECT'S PROJECT NO:				
Α	В	С	D	Е	F	G		H L	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK CO FROM PREVIOUS APPLICATION (D + E)	MPLETED THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	$\begin{array}{c} TOTAL\\ COMPLETED AND\\ STORED TO DATE\\ (D+E+F) \end{array}$	% (G÷C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)
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		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
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		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
	GRAND TOTAL	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.00%	\$0.00	\$0.00

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DOCUMENT 00 6519

CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

AIA DOCUMENT G706 - 1994 CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

(1 PAGE)

DRAFT AIA° Document G706A™ - 1994

Contractor's Affidavit of Release of Liens

PROJ	ECT: (Name and address)	ARCHITECT'S PROJ	IECT NUMBER:		OWNER:
Loyal	hanna Apartment Renovations	R17-077-04			ARCHITECT:
TO 01	NNER: (Name and address)	CONTRACT DATED	}		CONTRACTOR:
West	noreland County Housing				SURETY:
154 S	outh Greengate Road				OTHER:
Green	nsburg PA 15601				
STAT	E OF:				
COUN	ITY OF:				
The u listed of ma encur out of	ndersigned hereby certifies that to below, the Releases or Waivers of terials and equipment, and all perf nbrances or the right to assert liens the performance of the Contract r	the best of the unders Lien attached hereto ormers of Work, labor or encumbrances aga eferenced above.	igned's knowle include the Cor r or services wh inst any proper	dge, information a ntractor, all Subco no have or may hav ty of the Owner ar	nd belief, except as ntractors, all suppliers ve liens or rising in any manner
EXCE	PTIONS:				
SUPP 1.	ORTING DOCUMENTS ATTAC Contractor's Release or Waiver conditional upon receipt of fina	CHED HERETO: of Liens, l payment.	CONTRACT	OR: (Name and ad	ddress)
2	Saparata Palaasas or Waiyars	of Lions from	PV.	(
2.	Subcontractors and material an suppliers, to the extent required accompanied by a list thereof.	d equipment l by the Owner,	DI.	(Signature of au representative)	uthorized
	1 2			(Printed name a	und title)
			Subscribed	and sworn to befor	re me on this date:
			Bubbenibeu		
			Notary Pub My Commi	lic: ssion Expires:	

DOCUMENT 00 7200

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

AIA DOCUMENT A201 - 2017 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

(26 PAGES)

)RAFT AIA Document A201[™] - 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Loyalhanna Apartment Renovations 1111 Jefferson Street Latrobe Pa 15650

THE OWNER: (Name, legal status and address)

Westmoreland County Housing Authority 154 South Greengate Road, Greensburg, Pa 15601

THE ARCHITECT: (Name, legal status and address)

RW Sleighter, LLC 1060 Eberly Way Lemont Furnace PA 15456

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- 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.





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- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES



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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 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.

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§ 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, Subsubcontractors, 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 E203TM–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202TM–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 affected by the change until reasonable evidence is provide. 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 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 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.

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§ 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 to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed 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;

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- .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 reasons for withhold 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

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.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.

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§ 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, 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 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

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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, 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 coverage, the cost of 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, subsubcontractors, 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 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 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 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. 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.

§ 12.2.3 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 <u>Sum will</u> 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 <u>available</u> 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.



DOCUMENT 00 7200.1

GENERAL CONDITIONS ARTICLE 11.1: INSURANCE AND BONDS

COMMERCIAL GENERAL LIABILITY:	
Each Occurrence	\$1,000,000
Damages to rented premises (ea. occurrence)	\$1,000,000
Med Exp (any one person)	\$10,000
Personal & Adv Injury	\$1,000,000
General Aggregate	\$2,000,000
Products-Comp/OP AGG	\$2,000,000
AUTOMOBILE LIABILITY:	• · · · · · · · ·
Combined Single Limit	\$1,000,000
	¢5 000 000
Agrogato	\$5,000,000 \$5,000,000
Aggregate	\$5,000,000
WORKERS COMPENSATION	
AND EMPLOYER'S LIABILITY	
Per statute	
E.L. Each Accident	\$1.000.000
E.L. Disease – Ea. Employee	\$1.000.000
E.L. Disease – Policy Limit	\$1.000.000
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DOCUMENT 00 8800

GUIDE TO DAVIS-BACON

(40 PAGES)

U.S. Department of Housing and Urban Development

Labor Relations Desk Guide LR01.DG



Prof 16

DAVIS-BACON LABOR STANDARDS

A Contractor's Guide to Prevailing Wage Requirements for Federally-Assisted Construction Projects

January 2012 Previous versions obsolete

INTRODUCTION

This Guide has been prepared for you as a contractor performing work on construction projects that are assisted by the Department of Housing and Urban Development and subject to Davis-Bacon prevailing wage requirements. This Guide does not address contractor requirements involved in direct Federal contracting where HUD or another Federal agency enters into a procurement contract. In this latter case, the Federal Acquisition Regulations (FAR) are applicable. While the guidance contained in this Guide is generally applicable to any Davis-Bacon covered project, specific questions pertaining to direct Federal contracts should be addressed to the Contracting Officer who signed the contract for the Federal agency.

Our objective here is to provide you with a guide which is simple and non-bureaucratic yet comprehensive and which will help you better understand and comply with Davis-Bacon labor standards. HUD's Office of Labor Relations worked closely with the Department of Labor's Wage and Hour Division to make sure that the labor standards provisions in your contract and the specifics of complying with them represent the latest information. It is the Department of Labor which has general administrative oversight of all Federal contracting agencies, such as HUD, which administer the day-to-day responsibilities of enforcing Davis-Bacon provisions in construction contracts they either fund or assist in funding.

There are three chapters in this Guide. The first chapter offers a brief description of the laws and regulations associated with Federal labor standards administration and enforcement and discusses both what's in your contract that requires Davis-Bacon compliance and your responsibilities. The second chapter deals with labor standards and payroll reporting requirements. The third chapter discusses what can happen in the event there is a dispute about the wage rates that should be (or have been) paid and any back wages that may be due.

Finally, not all HUD construction projects are covered by Davis-Bacon wage rates. For the purpose of this Guide, we are assuming that a determination has already been made that Davis-Bacon wage rates are applicable. Should you wish assistance in determining whether Davis-Bacon wage rates apply to a particular project or if you need other related technical assistance, please consult with the HUD Labor Relations Field staff for your area. If you don't know which staff to contact, a list of Labor Relations field offices and their geographic areas and telephone numbers can be found on HUD's Home Page at the address below.

Visit the Office of Labor Relations on-line:

http://www.hud.gov/offices/olr

Obtain additional copies of this Guide and other publications at our website or by telephone from HUD's Customer Service Center at (800)767-7468.

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CHAPTER 1 LAWS, REGULATIONS, CONTRACTS AND RESPONSIBILITIES

The following paragraphs describe what the labor standards laws and regulations actually say and what they mean to you on HUD projects:

1-1 DAVIS-BACON AND OTHER LABOR LAWS.

a. <u>The Davis-Bacon Act (DBA).</u> The Davis-Bacon Act requires the payment of prevailing wage rates (which are determined by the U.S. Department of Labor) to all laborers and mechanics on Federal government and District of Columbia construction projects in excess of \$2,000. Construction includes alteration and/or repair, including painting and decorating, of public buildings or public works.

Most HUD construction work is not covered by the DBA itself since HUD seldom contracts directly for construction services. Most often, if Davis-Bacon wage rates apply to a HUD project it is because of a labor provision contained in one of HUD's "Related Acts" such as the U. S. Housing Act of 1937, the National Housing Act, the Housing and Community Development Act of 1974, the National Affordable Housing Act of 1990, and the Native American Housing Assistance and Self-Determination Act of 1996. The Related Acts are often referred to as the Davis-Bacon and Related Acts or DBRA.

b. <u>The Contract Work Hours and Safety Standards Act (CWHSSA).</u> CWHSSA requires time and one-half pay for overtime (O/T) hours (over 40 in any workweek) worked on the covered project. The CWHSSA applies to both direct Federal contracts and to indirect Federally-assisted contracts *except* where the assistance is solely in the nature of a loan guarantee or insurance. CWHSSA violations carry a liquidated damages penalty (\$10/day per violation). Intentional violations of CWHSSA standards can be considered for Federal criminal prosecution.

CWHSSA does not apply to prime contracts of \$100,000 or less. In addition, some HUD projects are not covered by CWHSSA because some HUD programs only provide loan guarantees or insurance. CWHSSA also does not apply to construction or rehabilitation contracts that are not subject to Federal prevailing wage rates (e.g., Davis-Bacon wage rates, or HUD-determined rates for operation of public housing and Indian block grant-assisted housing). However, even though CWHSSA overtime pay is not required, Fair Labor Standards Act (FLSA) overtime pay is probably still applicable. (See also Labor Relations Letter SL-95-01, CWHSSA Coverage threshold for overtime and health and safety provision, available on-line at the HUD Labor Relations Library at: www.hud.gov/ offices/olr/library.cfm)

- c. <u>The Copeland Act (Anti-Kickback Act).</u> The Copeland Act makes it a Federal crime for anyone to require any laborer or mechanic (employed on a Federal or Federally-assisted project) to kickback (i.e., give up or pay back) any part of their wages. The Copeland Act requires every employer (contractors and subcontractors) to submit weekly certified payroll reports (CPRs) and regulates permissible payroll deductions.
- d. <u>The Fair Labor Standards Act (FLSA).</u> The FLSA contains Federal minimum wage rates, overtime (O/T), and child labor requirements. These requirements generally apply to any labor performed. The DOL has the authority to administer and enforce FLSA. HUD will refer to the DOL any possible FLSA violations that are found on HUD projects.

1-2 DAVIS-BACON REGULATIONS.

The Department of Labor (DOL) has published rules and instructions concerning Davis-Bacon and other labor laws in the Code of Federal Regulations (CFR). These regulations can be found in *Title 29 CFR Parts 1, 3, 5, 6 and 7*. Part 1 explains how the DOL establishes and publishes DBA wage determinations (aka wage decisions) and provides instructions on how to use the determinations. Part 3 describes Copeland Act requirements for payroll deductions and the submission of weekly certified payroll reports. Part 5 covers the labor standards provisions that are in your contract relating to Davis-Bacon Act wage rates and the responsibilities of contractors and contracting agencies to administer and enforce the provisions. Part 6 provides for administrative proceedings enforcing Federal labor standards on construction and service contracts. Last, Part 7 sets parameters for practice before the Administrative Review Board. These regulations are used as the basis for administering and enforcing the laws.

DOL Regulations are available on-line on the World Wide Web: http://www.dol.gov/dol/allcfr/Title_29.htm

1-3 CONSTRUCTION CONTRACT PROVISIONS

Each contract subject to Davis-Bacon labor standards requirements must contain labor standards clauses and a Davis-Bacon wage decision. These documents are normally bound into the contract specifications.

a. The labor standards clauses. The labor standards clauses describe the responsibilities of the contractor concerning Davis-Bacon wages and obligate the contractor to comply with the labor requirements. The labor standards clauses also provide for remedies in the event of violations, including withholding from payments due to the contractor to ensure the payment of wages or liquidated damages which may be found due. These contract clauses enable the contract administrator to enforce the Federal labor standards applicable to the project. HUD has standard forms that contain contract clauses. For example, the HUD-2554, Supplementary Conditions to the Contract for Construction, which is issued primarily for FHA multifamily housing and other construction projects.

administered by HUD; the HUD-4010, Federal Labor Standards Provisions, which is used for CDBG and HOME projects, and the HUD-5370, General Conditions of the Contract for Construction or the HUD-5370-EZ (construction contracts ≤\$100,000) which are used for Public and Indian Housing projects.

HUD program labor standards forms are available on-line at: www.hud.gov/offices/adm/hudclips/index.cfm

b. Davis-Bacon Wage Decisions. The Davis-Bacon wage decision (or wage determination) is a listing of various construction work classifications, such as Carpenter, Electrician, Plumber and Laborer, and the minimum wage rates (and fringe benefits, where prevailing) that people performing work in those classifications must be paid.

Davis-Bacon wage decisions are established by the DOL for various types of construction (e.g., residential, heavy, highway) and apply to specific geographic areas, usually a county or group of counties. Wage decisions are modified from time to time to keep them current. In most cases, when the contract is awarded or when construction begins, the wage decision is "locked-in" and no future modifications are applicable to the contract or project involved.

All current Davis-Bacon wage decisions can be accessed on-line at no cost at: http://www.wdol.gov

1-4 RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR

The principal contractor (also referred to as the *prime* or *general contractor*) is responsible for the full compliance of all employers (the contractor, subcontractors and any lower-tier subcontractors) with the labor standards provisions applicable to the project. Because of the contractual relationship between a prime contractor and his/her subcontractors, subcontractors generally should communicate with the contract administrator only through the prime contractor. (See Contract Administrator, below.)

To make this Guide easier to understand, the term "prime contractor" will mean the principal contractor; "subcontractor" will mean all subcontractors including lower-tier subcontractors; and the term "employer" will mean all contractors as a group, including the prime contractor and any subcontractors and lower-tier subcontractors.

1-5 **RESPONSIBILITY OF THE CONTRACT ADMINISTRATOR.**

The **contract administrator** is responsible for the proper administration and enforcement of the Federal labor standards provisions on contracts covered by Davis-Bacon requirements. We use this term to represent the person (or persons) who will provide labor standards advice and support to you and other project principals (e.g., the owner, sponsor, architect), including providing the proper Davis-Bacon wage decision

(see 2-1, *The Wage Decision*) and ensuring that the wage decision and contract clauses are incorporated into the contract for construction. The contract administrator also monitors labor standards compliance (see 2-6, *Compliance Reviews*) by conducting interviews with construction workers at the job site and reviewing payroll reports, and oversees any enforcement actions that may be required.

The contract administrator could be an employee or agent of HUD, or of a city or county or public housing agency. For HUD projects administered directly by HUD staff, usually FHA-insured multifamily projects, the contract administrator will be the HUD Labor Relations field staff. But many HUD-assisted projects are administered by local contracting agencies such as Public Housing Agencies (PHAs), Indian tribes and tribally-designated housing entities (TDHEs), and States, cities and counties under HUD's Community Development Block Grant (CDBG) and HOME programs. In these cases, the contract administrator will likely be local agency staff. In either case, the guidance for you remains essentially the same.

The DOL also has a role in monitoring Davis-Bacon administration and enforcement. In addition, DOL has independent authority to conduct investigations. A DOL investigator or other DOL representative may visit Davis-Bacon construction sites to interview construction workers or review payroll information.

CHAPTER 2 HOW TO COMPLY WITH LABOR STANDARDS AND PAYROLL REPORTING REQUIREMENTS

WHERE TO START? Now that you know you're on a Davis-Bacon project and you know some of the legal and practical implications, what's next?

SECTION I - THE BASICS

2-1 THE WAGE DECISION.

Davis-Bacon labor standards stipulate the wage payment requirements for Carpenters, Electricians, Plumbers, Roofers, Laborers, and other construction work classifications that may be needed for the project. The Davis-Bacon wage decision that applies to the project contains a schedule of work classifications and wage rates that must be followed. If you don't have it already (and by now you should), you'll want to get a copy of the applicable Davis-Bacon wage decision.

Remember, the wage decision is contained in the contract specifications along with the labor standards clauses. See 1-3, Construction Contract Provisions.

a. <u>The work classifications and wage rates.</u> A Davis-Bacon wage decision is simply a listing of different work classifications and the minimum wage rates that must be paid to anyone performing work in those classifications. You'll want to make sure that the work classification(s) you need are contained in the wage decision and make certain you know exactly what wage rate(s) you will need to pay. Some wage decisions cover several counties and/or types of construction work (for example, residential and commercial work) and can be lengthy and difficult to read. Contact the contract administrator (HUD Labor Relations field staff or local agency staff) if you have any trouble reading the wage decision or finding the work classification(s) you need.

To make reading lengthy wage decisions easier for you, the contract administrator may prepare a Project Wage Rate Sheet (HUD-4720). This Sheet is a one-page transcript that will show only the classifications and wage rates for a particular project. A blank copy of a Project Wage Rate Sheet is provided for you in the appendix. Also, a fillable version of this form is available on-line at HUDClips (see web address in the Appendix). Contact the contract administrator monitoring your project for assistance with a Project Wage Rate Sheet.

b. Posting the wage decision. If you are the prime contractor, you will be responsible for posting a copy of the wage decision (or the Project Wage Rate Sheet) and a copy of the DOL Davis-Bacon poster titled Employee Rights under the Davis-Bacon Act (Form WH-1321) at the job site in a place that is easily accessible to all of the construction workers employed at the project and where the wage decision and poster won't be destroyed by wind or rain, etc. The Employee Rights under the Davis-Bacon Act poster is available in English and Spanish on-line at HUDClips (see address in the Appendix).

The Employee Rights under the Davis-Bacon Act poster (WH-1321) replaces the Notice to all Employees. The new poster is available in English and Spanish on-line at HUDClips (see address in the Appendix).

2-2 ADDITIONAL "TRADE" CLASSIFICATIONS AND WAGE RATES.

What if the work classification you need isn't on the wage decision? If the work classification(s) that you need doesn't appear on the wage decision, you will need to request an additional classification and wage rate. This process is usually very simple and you'll want to start the request right away. Basically, you identify the classification you need and recommend a wage rate for DOL to approve for the project. There are a few rules about additional classifications; you'll find these rules in the DOL regulations, Part 5, and in the labor clauses in your contract. The rules are summarized for you here:

- a. <u>Additional classification rules.</u> Additional classifications and wage rates can be approved if:
 - 1. The requested classification is used by construction contractors in the area of the project. (The area is usually defined as the county where the project is located).
 - 2. The work that will be performed by the requested classification is not already performed by another classification that is already on the wage decision. (In other words, if there already is an Electrician classification and wage rate on the wage decision you can't request another Electrician classification and rate.)
 - The proposed wage rate for the requested classification "fits" with the other wage rates already on the wage decision. (For example, the wage rate proposed for a trade classification such as Electrician must be at least as much as the lowest wage rate for other trade classifications already contained in the wage decision.) And,
 - 4. The workers that will be employed in the added classification (if it is known who the workers are/will be), or the workers' representatives, must agree with the proposed wage rate.

- b. <u>Making the request.</u> A request for additional classification and wage rate must be made in writing through the contract administrator. (If the contract administrator is a local agency, the agency will send the request to the HUD Labor Relations staff.) If you are a subcontractor, your request should also go through the prime contractor. All you need to do is identify the work classification that is missing and recommend a wage rate (usually the rate that employer is already paying to the employees performing the work) for that classification. You may also need to describe the work that the new classification will perform.
- c. <u>HUD review.</u> The HUD Labor Relations field staff will review the requested classification and wage rate to determine whether the request meets the DOL rules outlined in paragraph 2-2(a), above. If additional information or clarification is needed, the staff will contact the prime contractor (or contract administrator for local agency projects) for more information, etc. If the Labor Relations review finds that the request meets the rules, the staff will give preliminary approval on the request and refer it to the DOL for final approval. The staff will send to you a copy of the preliminary approval/referral letter to the DOL.

If the HUD Labor Relations staff doesn't think the request meets the rules and if agreement can't be reached on the proper classification or wage rate for the work described, the HUD Labor Relations staff will not approve the request. In this case, the staff will send your request to the DOL with an explanation why HUD believes that the request shouldn't be approved. The DOL still has final decision authority. You will receive a copy of the disapproval/referral letter to the DOL.

d. <u>DOL decision</u>. The DOL will respond to HUD Labor Relations in writing about the additional classification and wage rate request. HUD Labor Relations will notify you of the DOL decision in writing. If the DOL approves the request, the prime contractor must post the approval notice on the job site with the wage decision.

If the DOL does not approve the request, you will be notified about what classification and wage rate should be used for the work in question. You will also receive instructions about how to ask for DOL reconsideration if you still want to try to get your recommendation approved.

It's always a good idea to talk to the contract administrator before submitting an additional classification and wage rate request. The contract administrator can offer suggestions and advice that may save you time and increase the likelihood that DOL will approve your request. Usually, the contract administrator can give you an idea about what the DOL will finally decide.

2-3 CERTIFIED PAYROLL REPORTS.

You'll need to submit a weekly certified payroll report (CPR) beginning with the first week that your company works on the project and for every week afterward until your firm has completed its work. It's always a good idea to number the payroll reports beginning with #1 and to clearly mark your last payroll for the project "Final."

a. **Payroll formats.** The easiest form to use is DOL's WH-347, Payroll. A sample copy of the WH-347 is included in the back of this Guide. You may access a fillable version of the WH-347 on-line at HUDClips (see web address in the Appendix). Also, the contract administrator can provide a few copies of the WH-347 that you can reproduce.

You are not required to use Payroll form WH-347. You are welcome to use any other type of payroll, such as computerized formats, as long as it contains all of the information that is required on the WH-347.

b. <u>Payroll certifications.</u> The weekly payrolls are called certified because each payroll is signed and contains language certifying that the information is true and correct. The payroll certification language is on the reverse side of the WH-347. If you are using another type of payroll format you may attach the certification from the back of the WH-347, or any other format which contains the same certification language on the WH-347 (reverse).

DOL's website has Payroll Instructions and the Payroll form WH-347 in a "fillable" PDF format at this address: www.dol.gov/whd/forms/wh347.pdf

c. <u>"No work" payrolls.</u> "No work" payrolls may be submitted whenever there is a temporary break in your work on the project, for example, if your firm is not needed on the project right now but you will be returning to the job in a couple of weeks. (See tip box, for "no work" payroll exemption!) However, if you know that your firm will not be working on the project for an extended period of time, you may wish to send a short note to the contract administrator to let them know about the break in work and to give an approximate date when your firm will return to the project. If you number payrolls consecutively or if you send a note, you do not need to send "no work" payrolls.

If you number your payroll reports consecutively, you do not need to submit "no work" payrolls!

d. **Payroll review and submission.** The prime contractor should review each subcontractor's payroll reports for compliance prior to submitting the reports to the contract administrator. Remember, the prime contractor is responsible for the full compliance of all subcontractors on the contract and will be held accountable for any wage restitution that may be found due to any laborer or mechanic that is underpaid and for any liquidated damages that may be assessed for overtime violations. All of the payroll reports for any project must be submitted to the contract administrator through the prime contractor.

An alert prime contractor that reviews subcontractor payroll submissions can detect any misunderstandings early, prevent costly underpayments and protect itself from financial loss should underpayments occur.

- e. **Payroll retention.** Every contractor (including every subcontractor) must keep a complete set of their own payrolls and other basic records such as employee addresses and full SSNs, time cards, tax records, evidence of fringe benefit payments, for a Davis-Bacon project for at least 3 years after the project is completed. The prime contractor must keep a complete set of all of the payrolls for every contractor (including subcontractors) for at least 3 years after completion of the project.
- f. **Payroll inspection.** In addition to submitting payrolls to the contract administrator, every contractor (including subcontractors) must make their own copy of the payrolls and other basic records available for review or copying to any authorized representative from HUD or from DOL.

2-4 DAVIS-BACON DEFINITIONS.

Before we discuss how to complete the weekly payroll forms, we need to review a couple of definitions. These definitions can help you understand what will be required of you:

- a. <u>Laborer or mechanic.</u> "Laborers" and "mechanics" mean anyone who is performing construction work on the project, including trade journeymen (carpenters, plumbers, sheet metal workers, etc.), apprentices, and trainees and, for CWHSSA purposes, watchmen and guards. "Laborers" and "mechanics" are the two groups of workers that must be paid not less than Davis-Bacon wage rates.
 - 1. <u>Working foremen</u>. Foremen or supervisors that regularly spend more than 20% of their time performing construction work and do not meet the exclusions in paragraph 2 below are covered "laborers" and "mechanics" for labor standards purposes for the time spent performing construction work.
 - 2. <u>Exclusions.</u> People whose duties are primarily administrative, executive or clerical are not laborers or mechanics. Examples include superintendents, office staff, timekeepers, messengers, etc. (Contact the contract administrator if you have any questions about whether a particular employee is excluded.)

b. **Employee.** Every person who performs the work of a laborer or mechanic is "employed" regardless of any contractual relationship which may be alleged to exist between a contractor or subcontractor and such person. This means that even if there is a contract between a contractor and a worker, the contractor must make sure that the worker is paid at least as much as the wage rate on the wage decision for the classification of work they perform. Note that there are no exceptions to the prevailing wage requirements for relatives or for self-employed laborers and mechanics.

For more information about working subcontractors, ask the contract administrator or your HUD Labor Relations Field Staff for a copy of Labor Relations Letter LR-96-01, Labor standards compliance requirements for self-employed laborers and mechanics. Labor Relations Letters and other helpful Labor Relations publications are available at HUD's Labor Relations web site (see the list of web site addresses in the Appendix).

c. <u>Apprentices and trainees.</u> The only workers who can be paid less than the wage rate on the wage decision for their work classification are "apprentices" and "trainees" registered in approved apprenticeship or training programs. Approved programs are those which have been registered with the DOL or a DOL-recognized State Apprenticeship Council (SAC). Apprentices and trainees are paid wage rates in accordance with the wage schedule in the approved program.

Most often, the apprentice/trainee wage rate is expressed as a series of percentages tied to the amount of time spent in the program. For example, 0-6 months: 65%; 6 months - 1 year: 70%; etc. The percentage is applied to the journeyman's wage rate. On Davis-Bacon projects, the percentage must be applied to the journeyman's wage rate on the applicable wage decision for that craft.

- 1. **Probationary apprentice.** A "probationary apprentice" can be paid as an apprentice (less than the rate on the wage decision) if the DOL or SAC has certified that the person is eligible for probationary employment as an apprentice.
- 2. <u>**Pre-apprentice.**</u> A "pre-apprentice", that is, someone who is not registered in a program and who hasn't been DOL- or SAC-certified for probationary apprenticeship is not considered to be an "apprentice" and must be paid the full journeyman's rate on the wage decision for the classification of work they perform.
- 3. <u>Ratio of apprentices and trainees to journeymen.</u> The maximum number of apprentices or trainees that you can use on the job site cannot exceed the ratio of apprentices or trainees to journeymen allowed in the approved program.

- d. **Prevailing wages or wage rates.** Prevailing wage rates are the wage rates listed on the wage decision for the project. The wage decision will list a minimum basic hourly rate of pay for each work classification. Some wage decisions include fringe benefits which are usually listed as an hourly fringe rate. If the wage decision includes a fringe benefit rate for a classification, you will need to add the fringe benefit rate to the basic hourly rate unless you provide bona fide fringe benefits for your employees.
 - 1. **Piece-work.** Some employees are hired on a piece-work basis, that is, the employee's earnings are determined by a factor of work produced. For example, a Drywall Hanger's earnings may be calculated based upon the square feet of sheetrock actually hung, a Painter's earnings may be based upon the number of units painted. Employers may calculate weekly earnings based upon piece rates provided the weekly earnings are sufficient to satisfy the wage rate requirement based upon actual hours, including any overtime, worked. Accurate time records must be maintained for any piece-work employees. If the weekly earnings based upon the actual hours worked and the rate on the wage decision for the work classification(s) involved.
- e. <u>Fringe benefits</u> Fringe benefits can include health insurance premiums, retirement contributions, life insurance, vacation and other paid leave as well as some contributions to training funds. Fringe benefits do not include employer payments or contributions required by other Federal, State or local laws, such as the employer's contribution to Social Security or some disability insurance payments.

Note that the total hourly wage rate paid to any laborer or mechanic (basic wage or basic wage plus fringe benefits) may be no less than the total wage rate (basic wage or basic wage plus fringe benefits) on the wage decision for their craft. If the value of the fringe benefit(s) you provide is less than the fringe benefit rate on the wage decision, you will need to add the balance of the wage decision fringe benefit rate to the basic rate paid to the employee. For example, if the wage decision requires \$10/hour basic rate plus \$5/ hour fringe benefits, you must pay no less than that total (\$15/hour) in the basic rate or basic rate plus whatever fringe benefit you may provide. You can meet this obligation in several ways: you could pay the base wage and fringe benefits, or you could pay \$12 basic plus \$3 fringe benefits. You can also off-set the amount of the base wage if you pay more in fringe benefits such as by paying or \$9 basic plus \$6 fringe benefits; as long as you meet the total amount. The amount of the base wage that you may off-set with fringe benefits is limited by certain IRS and FLSA requirements.

f. **Overtime.** Overtime hours are defined as all hours worked on the contract in excess of 40 hours in any work week. Overtime hours must be paid at no less than one and one-half times the regular rate of basic pay plus the straight-time rate of any required fringe benefits.

g. <u>Deductions.</u> You may make payroll deductions as permitted by DOL Regulations 29 CFR Part 3. These regulations prohibit the employer from requiring employees to "kick-back" (i.e., give up) any of their earnings. Allowable deductions which do not require prior DOL permission include employee obligations for income taxes, Social Security payments, insurance premiums, retirement, savings accounts, and any other legally-permissible deduction authorized by the employee. Deductions may also be made for payments on judgments and other financial obligations legally imposed against the employee.

Referring, again, to our example above where the wage decision requiring a \$15 total wage obligation (\$10 basic wage plus \$5 fringe benefits) was met by paying \$9 base wage plus \$6 fringe benefits: Note that overtime rates must be based on one and one-half times the basic rate as stated on the wage decision. In the above example, the employer must pay for overtime: \$15/hr (\$9 basic + \$6 fringe) plus \$5 (one-half of \$10, the wage decision basic rate) for a total of \$20 per hour.

- h. Proper designation of trade. You must select a work classification on the wage decision for each worker based on the actual type of work he/she performed and you must pay each worker no less than the wage rate on the wage decision for that classification regardless of their level of skill. In other words, if someone is performing carpentry work on the project, they must be paid no less than the wage rate on the wage decision for Carpenters even if they aren't considered by you to be fully trained as a Carpenter. Remember, the only people who can be paid less than the rate for their craft are apprentices and trainees registered in approved programs.
 - 1. <u>Split-classification</u>. If you have employees that perform work in more than one trade during a work week, you can pay the wage rates specified for each classification in which work was performed only if you maintain accurate time records showing the amount of time spent in each classification of work. If you do not maintain accurate time records, you must pay these employees the highest wage rate of all of the classifications of work performed.
- i. <u>Site of work.</u> The "site of work" is where the Davis-Bacon wage rates apply. Usually, this means the boundaries of the project. "Site of work" can also include other adjacent or virtually adjacent property used by a contractor or subcontractor in the construction of the project, like a fabrication site that is dedicated exclusively, or nearly so, to the project.

SECTION II - REPORTING REQUIREMENTS

2-5 COMPLETING A PAYROLL REPORT.

What information has to be reported on the payroll form? The weekly payroll form doesn't ask for any information that you don't already need to keep for wage payment and tax purposes. For example, you need to know each employee's name; his or her work classification (who is working for you and what do they do?), the hours worked during the week, his or her rate of pay, the gross amount earned (how much did they earn?), the amounts of any deductions for taxes, etc., and the net amount paid (how much should the paycheck be made out for?). No more information than you need to know in order to manage your work crew and make certain they are paid properly. And, certainly, no more information than you need to keep for IRS, Social Security and other tax and employment purposes.

For many contractors, the Weekly Certified Payroll is the only Davis-Bacon paperwork you need to submit!

You are required to submit certified payrolls to illustrate and document that you have complied with the prevailing wage requirements. The purpose of the contract administrator's review of your payrolls is to verify your compliance. Clearer and complete payroll reports will permit the contract administrator to complete reviews of your payroll reports quickly.

- a. **Project and contractor/subcontractor information.** Each payroll must identify the contractor or subcontractor's name and address, the project name and number, and the week ending date. Indicate the week dates in the spaces provided. Numbering payrolls is optional but strongly recommended.
- b. <u>Employee information</u>. Effective January 18, 2009, payrolls shall not report employee addresses or full Social Security Numbers (SSNs). Instead, the first payroll on which each employee appears shall include the employee's name and an individually identifying number, usually the last 4 digits of the employee's SSN. Afterward, the identifying number does not need to be reported unless it is necessary to distinguish between employees, e.g., if two employees have the same name.

Employers (prime contractors and subcontractors) must maintain the current address and full SSN for each employee and must provide this information upon request to the contracting agency or other authorized representative responsible for federal labor standards compliance monitoring. Prime contractors may require a subcontractor(s) to provide this information for the prime contractor's records. DOL has modified form WH-347, Payroll, to accommodate these reporting requirements.

c. <u>Work classification</u>. Each employee must be classified in accordance with the wage decision based on the type of work they actually perform.

- 1. <u>Apprentices or trainees.</u> The first payroll on which any apprentice or trainee appears must be accompanied by a copy of that apprentice's or trainee's registration in a registered or approved program. A copy of the portions of the registered or approved program pertaining to the wage rates and ratios shall also accompany the first payroll on which the first apprentice or trainee appears.
- 2. <u>Split classifications.</u> For an employee that worked in a split classification, make a separate entry for each classification of work performed distributing the hours of work to each classification, accordingly, and reflecting the rate of pay and gross earnings for each classification. Deductions and net pay may be based upon the total gross amount earned for all classifications.
- d. <u>Hours worked.</u> The payroll should show ONLY the regular and overtime hours worked on this project. Show both the daily and total weekly hours for each employee. If an employee performs work at job sites other than the project for which the payroll is prepared, those "other job" hours should not be reported on the payroll. In these cases, you should list the employee's name, classification, hours for this project only, the rate of pay and gross earnings for this project, and the gross earned for all projects. Deductions and net pay may be based upon the employee's total earnings (for all projects) for the week.
- e. **<u>Rate of pay.</u>** Show the basic hourly rate of pay for each employee for this project. If the wage decision includes a fringe benefit and you do not participate in approved fringe benefit programs, add the fringe benefit rate to the basic hourly rate of pay. Also list the overtime rate if overtime hours were worked.
 - 1. <u>Piece-work.</u> For any piece-work employees, the employer must compute an effective hourly rate for each employee each week based upon the employee's piece-work earnings for that week. To compute the effective hourly rate, divide the piece-work earnings by the total number of hours worked, including consideration for any overtime hours.

The effective hourly rate must be reflected on the certified payroll and this hourly rate may be no less than the wage rate (including fringe benefits, if any) on the wage decision for the classification of work performed. It does not matter that the effective hourly rate changes from week-to-week, only that the rate is no less than the rate on the wage decision for the classification of work performed.

Remember, the overtime rate is computed at one and one-half times the basic rate of pay plus any fringe benefits. For example, if the wage decision requires $10/10 \text{ km} + 5/10 \text{ km} + 5 = 20/10 \text{ km$

f. **Gross wages earned.** Show the gross amount of wages earned for work performed on this project. Note: For employees with work hours and earnings on other projects, you may show gross wages for this project over gross earnings all projects (for example, \$425.40/\$764.85) and base deductions and net pay on the "all projects" earnings.

g. <u>Deductions.</u> Show the amounts of any deductions from the gross earnings. "Other" deductions should be identified (for example, Savings Account or Loan Repayment). Any voluntary deduction (that is, not required by law or by an order of a proper authority) must be authorized in writing by the employee or provided for in a collective bargaining (union) agreement. A short note signed by the employee is all that is needed and should accompany the first payroll on which the other deduction appears.

Only one employee authorization is needed for recurring (e.g., weekly) other deductions. Written employee authorization is not required for income tax and Social Security deductions.

- h. **<u>Net pay.</u>** Show the net amount of wages paid.
- i. <u>Statement of compliance.</u> The Statement of Compliance is the certification. It is located on the reverse side of a standard payroll form (WH-347). Be sure to complete the identifying information at the top, particularly if you are attaching the Statement of Compliance to an alternate payroll form such as a computer payroll. Also, you must check either 4(a) or 4(b) if the wage decision contains a fringe benefit. Checking 4(a) indicates that you are paying required fringe benefits to approved plans or programs; and 4(b) indicates that you are paying any required fringe benefit amounts directly to the employee by adding the fringe benefit to programs and the balance directly to the employee, explain those differences in box 4(c).

Only one Statement of Compliance is required for each employer's weekly payroll no matter how many pages are needed to report the employee data.

j. **Signature.** Make sure the payroll is signed with an original signature in ink. The payroll must be signed by a principal of the firm (owner or officer such as the president, treasurer or payroll administrator) or by an authorized agent (a person authorized by a principal in writing to sign the payroll reports). Signature authorization (for persons other than a principal) should be submitted with the first payroll signed by such an agent. Signatures in pencil; signature stamps; xerox, pdf and other facsimiles are not acceptable.

SECTION III - PAYROLL REVIEWS AND CORRECTIONS

2-6 <u>COMPLIANCE REVIEWS.</u>

The contract administrator or other inspector may visit the project site and interview some of the workers concerning their employment on the project. The DOL may also independently conduct its own reviews (see 1-5). In addition, the contract administrator will periodically review payrolls and related submissions, comparing the interview information to the payrolls, to ensure that the labor standards requirements have been met. You will be notified by the contract administrator if these reviews find any discrepancies or errors. You will be given instructions about what steps must be taken to correct any problems.

- a. <u>On-site interviews.</u> Every employer (contractor, subcontractor, etc.) must make their employees available for interview at the job site with the contract administrator or other agency representative, or HUD or DOL representative. The interviews are confidential and the employee will be asked about the kind of work they perform and their rate of pay. Every effort will be made to ensure that these interviews cause as little disruption as possible to the on-going work. The interviewer will record the interview information, usually on a form HUD-11, Record of Employee Interview, and forward the interviews to the contract administrator.
- b. Project payroll reviews. The contract administrator will compare the information on the interview forms to the corresponding payrolls to ensure that the workers are properly listed on the payrolls for the days and hours worked on the job site, work classification and rate of pay. The contract administrator will also review the payroll submissions to make certain that the payrolls are complete and signed; that employees are paid no less than the wage rate for the work classification shown; apprentice and trainee certifications are submitted (where needed); employee or other authorizations for other deductions are submitted (where needed); etc.

2-7 TYPICAL PAYROLL ERRORS AND REQUIRED CORRECTIONS.

The following paragraphs describe common payroll errors and the corrective steps you must take.

- a. <u>Inadequate payroll information</u>. If an alternate payroll format used by an employer (such as some computer payrolls) is inadequate, e.g., does not contain all of the necessary information that would be on the optional form WH-347, the employer will be asked to resubmit the payrolls on an acceptable form.
- b. <u>Missing identification numbers.</u> If the first payroll on which an employee appears does not contain the employee's individually identifying number, the employer will be asked to supply the missing information. This information can be reported on the next payroll submitted by the employer if the employer is still working on the project. Otherwise, the employer will be asked to submit a correction certified payroll.

- c. **Incomplete payrolls.** If the information on the payroll is not complete, for example, if work classifications or rates of pay are missing, the employer will be asked to send a correction certified payroll.
- d. <u>Classifications.</u> If the payrolls show work classifications that do not appear on the wage decision, the employer will be asked to reclassify the employees in accordance with the wage decision or the employer may request an additional classification and wage rate (see 2-2). If reclassification results in underpayment (i.e., the wage rate reported on the payroll is less than the rate required for the new classification), the employer will be asked to pay wage restitution to all affected reclassified employees. (see 2-8 for instructions about wage restitution.)
- e. <u>Wage rates.</u> If the wage rates on the payroll are less than the wage rates on the wage decision for the work classifications reported, the employer will be asked to pay wage restitution to all affected employees.
- f. <u>Apprentices and trainees.</u> If a copy of the employee's registration or the approved program ratio and wage schedule are not submitted with the first payroll on which an apprentice or trainee appears, the employer will be asked to submit a copy of each apprentice's or trainee's registration and/or the approved program ratio and wage schedule. If the ratio of apprentices or trainees to journeymen on the payroll is greater than the ratio in the approved program, the employer will be asked to pay wage restitution to any excess apprentices or trainees. Also, any apprentice or trainee that is not registered in an approved program must receive the journeyman's wage rate for the classification of work they performed.
- g. **Overtime.** If the employees did not receive at least time and one-half for any overtime hours worked on the project, the following will occur:
 - 1. If the project is subject to CWHSSA overtime requirements, the employer will be asked to pay wage restitution for all overtime hours worked on the project. The employer may also be liable to the United States for liquidated damages computed at \$10 per day per violation. Or,
 - 2. If the project is not subject to CWHSSA, the employer will be notified of the possible FLSA overtime violations. Also, the contract administrator may refer the matter to the DOL for further review.
- h. **Computations.** If the payroll computations (hours worked times rate of pay) or extensions (deductions, net pay) show frequent errors, the employer will be asked to take greater care. Wage restitution may be required if underpayments resulted from the errors.
- i. <u>**Deductions.**</u> If there are any "Other" deductions that are not identified, or if employee authorization isn't provided, or if there is any unusual (very high, or large number) deduction activity, the employer will be asked to identify the deductions, provide employee authorization or explain unusual deductions, as necessary.

HUD does not enforce or attempt to provide advice on employer obligations to make deductions from employee earnings for taxes or Social Security. However, HUD may refer to the IRS or other responsible agency copies of certified payroll reports that show wages paid in gross amounts (i.e., without tax deduction) for its review and appropriate action.

- j. **Fringe benefits.** If the wage decision contains fringe benefits but the payroll does not indicate how fringe benefits were paid [neither 4(a) nor 4(b) is marked on the Statement of Compliance], the employer may be asked to submit correction certified payrolls and will be required to pay wage restitution if underpayments occurred. However, if the basic hourly rates for the employees are at least as much as the total wage rate on the wage decision (basic hourly rate plus the fringe benefit rate), no correction is necessary.
- k. <u>Signature.</u> If the payroll Statement of Compliance is not signed or is missing, the employer will be asked to submit a signed Statement of Compliance for each payroll affected. If the Statement of Compliance is signed by a person who is not a principle of the firm and that person has not been authorized by principle to sign, the employer will be asked to provide an authorization or to resubmit the Statement(s) of Compliance bearing the signature of a principle or other authorized signatory.
- On-site interview comparisons. If the comparison of on-site interviews to the payrolls indicates any discrepancies (for example, the employee does not appear on the payroll for the date of the interview), the employer will be asked to submit a correction certified payroll report.
- m. <u>Correction certified payroll.</u> Any and all changes to data on a submitted payroll report must be reported on a certified correction payroll. In no case will a payroll report be returned to the prime contractor or employer for revision.

2-8 RESTITUTION FOR UNDERPAYMENT OF WAGES.

Where underpayments of wages have occurred, the employer will be required to pay wage restitution to the affected employees. Wage restitution must be paid promptly in the full amounts due, less permissible and authorized deductions. All wages paid to laborers and mechanics for work performed on the project, including wage restitution, must be reported on a certified payroll report.

a. **Notification** to the Employer/Prime contractor. The contract administrator will notify the employer and/or prime contractor in writing of any underpayments that are found during payroll or other reviews. The contract administrator will describe the underpayments and provide instructions for computing and documenting the restitution to be paid. The employer/ prime contractor is allowed 30 days to correct the underpayments. Note that the prime contractor is responsible to the contract administrator for ensuring that restitution is paid. If the employer is a subcontractor, the subcontractor will usually make the computations and restitution payments and furnish the required documentation through the prime contractor.

The contract administrator may communicate directly with a subcontractor when the underpayments are plainly evident and the subcontractor is cooperative. It is best to work through the prime contractor when the issues are complex, when there are significant underpayments and/or the subcontractor is not cooperative. In all cases, the subcontractor must ensure that the prime contractor receives a copy of the required corrective documentation.

- b. **Computing wage restitution.** Wage restitution is simply the difference between the wage rate paid to each affected employee and the wage rate required on the wage decision for all hours worked where underpayments occurred. The difference in the wage rates is called the adjustment rate. The adjustment rate times the number of hours involved equals the gross amount of restitution due. You may also compute wage restitution by calculating the total amount of Davis-Bacon wages earned and subtracting the total amount of wages paid. The difference is the amount of back wages due.
- c. <u>Correction certified payrolls.</u> The employer will be required to report the restitution paid on a correction certified payroll. The correction payroll will reflect the period of time for which restitution is due (for example, Payrolls #1 through #6; or a beginning date and ending date). The correction payroll will list each employee to whom restitution is due and their work classification; the total number of work hours involved (daily hours are usually not applicable for wage restitution); the adjustment wage rate (the difference between the required wage rate and the wage rate paid); the gross amount of restitution due; deductions and the net amount actually paid. A properly signed Statement of Compliance must accompany the correction payroll.

HUD no longer requires the signature of the employee on the correction payroll to evidence employee receipt of restitution payment. In addition, except in the most extraordinary cases, HUD no longer requires employers to submit copies of restitution checks (certified, cashiers, canceled or other), or employee-signed receipts or waivers.

- d. **Review of correction CPR.** The contract administrator will review the correction certified payroll to ensure that full restitution was paid. The prime contractor shall be notified in writing of any discrepancies and will be required to make additional payments, if needed, documented on a correction certified payroll within 30 days.
- e. <u>Unfound workers.</u> Sometimes, wage restitution cannot be paid to an affected employee because, for example, the employee has moved and can't be located. After wage restitution has been paid to all of the workers who could be located, the employer must submit a list of any workers who could not be found and paid (i.e., unfound workers) providing their names, Social Security Numbers, last known addresses and the gross amount due. In such cases, at the end of the project the prime contractor will be required

to place in a deposit or escrow account an amount equal to the total gross amount of restitution that could not be paid because the employee(s) could not be located. The contract administrator will continue attempts to locate the unfound workers for 3 years after the completion of the project. After 3 years, any amount remaining in the account for unfound workers will be credited and/or forwarded by the contract administrator to HUD.

CHAPTER 3 LABOR STANDARDS DISPUTES, ADMINISTRATIVE REVIEWS, WITHHOLDING, DEPOSITS AND ESCROW ACCOUNTS, AND SANCTIONS

WHAT HAPPENS WHEN THINGS GO WRONG?

3-1 INTRODUCTION.

Even in the best of circumstances, things can go wrong. In a Davis-Bacon context, "things going wrong" usually means there's a difference of opinion or a dispute about whether and to what extent underpayments have occurred. These disputes are usually between the contract administrator and one or more employers (the prime contractor and/ or a subcontractor). The dispute may involve something simple such as an additional classification request that is pending before the DOL; or something as significant as investigative findings following a complaint of underpayment. This chapter discusses some of what you may expect and what you can do to make your views known and to lessen any delays in resolving the problem or issue.

3-2 ADMINISTRATIVE REVIEW ON LABOR STANDARDS DISPUTES.

As mentioned in the Introduction above, a dispute about labor standards and compliance can arise for a number of reasons. The labor standards clauses in your contract and DOL regulations provide for administrative review of issues where there is a difference of views between the contract administrator and any employer. The most common circumstances include:

- a. <u>Additional classifications and wage rates.</u> Additional classification and wage rate requests are sometimes denied by the DOL. An employer that is dissatisfied with the denial can request reconsideration by the DOL Wage and Hour Administrator. The employer may continue to pay the wage rate, as requested, until a final decision is rendered on the matter. When the final decision is known, the employer will be required to pay any additional wages that may be necessary to satisfy the wage rate that is established.
 - <u>Reconsideration.</u> The DOL normally identifies the reasons for denial in its response to the request. Any interested person (for example, the contract administrator, employer, representatives of the employees) may request reconsideration of the decision on the additional classification request. The request for reconsideration must be made in writing and must thoroughly address the denial reasons identified by the DOL. Employer requests for reconsideration should be made through the contract administrator but may be made directly to the DOL. (See 2-2(d), and also DOL Regulations 29 CFR 1.8.) All requests initiated by or made through the contract administrator or HUD must be submitted through the HUD Headquarters Office of Labor Relations.

- Administrative Review Board. Any interested party may request a review of the Administrator's decision on reconsideration by the DOL's Administrative Review Board. DOL regulations 29 CFR Part 7 explain the procedures for such reviews. (See also 29 CFR 1.9.)
- b. <u>Findings of underpayment.</u> Compliance reviews and other follow-up enforcement actions may result in findings of underpayment. The primary goal in every case and at every step in this process is to reach agreements about who may have been underpaid and how much wage restitution may be due and, of course, to promptly deliver restitution to any underpaid workers. The contract administrator will usually work informally with you to reach such agreements. You will have an opportunity to provide additional information to the contract administrator that may explain apparent inconsistencies and/or resolve the discrepancies.

If informal exchanges do not result in agreement, the final determination and schedule of back wages due will be presented to you in writing and you will be permitted 30 days in which to correct the underpayment(s) or to request a hearing on the matter before the DOL. The request for hearing must be made in writing through the contract administrator and must explain what findings are in dispute and the reasons. In such cases, HUD is required to submit a report to DOL for review and further consideration. All requests for DOL hearing must be submitted through the HUD Headquarters Office of Labor Relations.

- 1. <u>DOL review.</u> The DOL will review the contract administrator's report and the arguments against the findings presented in the hearing request. The DOL may affirm or modify the findings based upon the materials presented. You will be notified in writing by the DOL of the results of its review. If DOL concludes that violations have occurred, you will be given an opportunity to correct any underpayments or to request a hearing before a DOL Administrative Law Judge (ALJ). (See DOL Regulations 29 CFR 5.11 (b) and 29 CFR Part 6, Rules of Practice for Administrative Proceedings.)
- <u>Administrative Review Board.</u> Contractors and/or subcontractors may request a review by the Administrative Review Board of the decision(s) rendered by the DOL ALJ in the administrative hearing process. See DOL regulations 29 CFR Part 7 for more information about this proceeding.

3-3 <u>WITHHOLDING.</u>

The contract administrator shall cause withholding from payments due to the prime contractor to ensure the payment of wages which are believed to be due and unpaid, for example, if wage underpayments or other violations are not corrected within 30 days after written notification to the prime contractor. DOL may also direct the withholding of contract payments for alleged wage underpayments. Withholding is considered to be serious and is not taken unless warranted. If withholding is deemed necessary, you will be notified in writing. Only the amounts needed to meet the contractor's (and/or subcontractors') liability shall be withheld.

3-4 DEPOSITS AND ESCROWS.

In every case, we attempt to complete compliance actions and resolve any disputes before the project is completed and final payments are made. Sometimes, corrective actions or disputes continue after completion and provisions must be made to ensure that funds are available to pay any wage restitution that is ultimately found due. In these cases, we allow projects to proceed to final closing and final payments provided the prime contractor deposits an amount equal to the potential liability for wage restitution and liquidated damages, if necessary, in a special account. The deposit or escrow account is controlled by the contract administrator. When a final decision is rendered, the contract administrator makes disbursements from the account in accordance with the decision. Deposit/escrow accounts are established for one or more of the following reasons:

Remember, the prime contractor is responsible and will be held liable for any wage restitution that is due to any worker employed in the construction of the project, including workers employed by subcontractors and any lower-tier subcontractors. See 1-4, Responsibility of the Principal Contractor, and 2-8, Restitution for Underpayment of Wages.

- a. Where the parties have agreed to amounts of wage restitution that are due but the employer hasn't furnished evidence yet that all of the underpaid workers have received their back wages, e.g., some of the workers have moved and could not be located. The amount of the deposit is equal to the total gross amount of restitution due to workers lacking payment evidence. As these workers are paid and proper documentation is provided to the contract administrator, amounts corresponding to the documented payments are returned to the depositor. Amounts for any workers who cannot be located are held in the deposit/escrow account for three years and disposed as described in 2-8(f) of this Guide.
- b. Where underpayments are suspected or alleged and an investigation has not yet been completed. The deposit is equal to the amount of wage restitution and any liquidated damages, if applicable, that are estimated to be due. If the final determination of wages due is less than the amount estimated and placed in the escrow account, the escrow will be reduced to the final amount and the difference will be returned to the depositor.

If the parties agree to the investigative findings, the amounts due to the workers will be paid by the employer. As these workers are paid and proper documentation is provided to the contract administrator, the gross amounts corresponding to the documented payments are returned to the depositor.

 If the employer is unable to make the payments to the workers, e.g., lacks the funds necessary, the contract administrator may make disbursements directly to the workers in the net amounts calculated by the employer. The amounts withheld from the workers for tax deduction will be returned to the employer as payments to workers are made. The employer shall be responsible for reporting and transmitting withholdings to the appropriate agencies. 2. If the employer is not cooperating in the resolution, the contract administrator shall make disbursements to the workers in accordance with the schedule of wages due. Amounts for unfound workers will be retained as described above (See 2-8(f) and 3-4(a)).

If the parties do not agree and an administrative hearing is requested, the escrow will be maintained as explained in 3-4(c), below.

Remember, if you have any questions or need assistance concerning labor standards requirements help is always available. Contact the contract administrator for the project you're working on or the HUD Field Labor Relations staff in your area.

c. Where the parties are waiting for the outcome of an administrative hearing that has been or will be requested contesting a final determination of wages due. The deposit shall be equal to the amount of wage restitution and liquidated damages, if applicable, that have been determined due. Once a final decision is rendered, disbursements from the escrow account are made in accordance with the decision.

3-5 ADMINISTRATIVE SANCTIONS.

Contractors and/or subcontractors that violate the labor standards provisions may face administrative sanctions imposed by HUD and/or DOL.

- a. <u>DOL debarment.</u> Contractors and/or subcontractors that are found by the Secretary of Labor to be in aggravated or willful violation of the labor standards provisions of the Davis-Bacon and Related Acts (DBRA) will be ineligible (debarred) to participate in any DBRA or Davis-Bacon Act contracts for up to 3 years. Debarment includes the contractor or subcontractor and any firm, corporation, partnership or association in which the contractor or subcontractor has a substantial interest. Debarment proceedings can be recommended by the contract administrator or can be initiated by the DOL. Debarment proceedings are described in DOL regulations 29 CFR 5.12.
- b. <u>**HUD sanctions.**</u> HUD sanctions may include Limited Denials of Participation (LDPs), debarments and suspensions.
 - Limited Denial of Participation. HUD may issue to the employer a limited denial of participation (LDP) which prohibits the employer from further participation in HUD programs for a period up to one year. The LDP is usually effective for the HUD program in which the violation occurred and for the geographic jurisdiction of the issuing HUD Office. HUD regulations concerning LDP's are found at 24 CFR 24.700-24.714.

2. Debarment and suspensions. In certain circumstances, HUD may initiate its own debarment or suspension proceedings against a contractor and/or subcontractor in connection with improper actions regarding Davis-Bacon obligations. For example, HUD may initiate debarment where a contractor has been convicted for making false statements (such as false statements on certified payrolls or other prevailing wage certifications) or may initiate suspension where a contractor has been indicted for making false statements. HUD regulations concerning debarment and suspension are found at 24 CFR Part 24.

3-6 FALSIFICATION OF CERTIFIED PAYROLL REPORTS.

Contractors and/or subcontractors that are found to have willfully falsified payroll reports (Statements of Compliance), including correction certified payroll reports, may be subject to civil or criminal prosecution. Penalties may be imposed of \$1,000 and/or one year in prison for each false statement (see Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code).

Remember, if you have any questions or need assistance concerning labor standards requirements help is always available. Contact the contract administrator for the project you're working on or the HUD Field Labor Relations staff in your area.
ACRONYMS AND SYMBOLS

CDBG -	Community Development Block Grant
CFR -	Code of Federal Regulations
CPR -	Certified Payroll Report
CWHSSA -	Contract Work Hours and Safety Standards Act
DBA -	Davis-Bacon Act
DBRA -	Davis-Bacon and Related Acts
DOL -	Department of Labor
FHA -	Federal Housing Administration
FLSA -	Fair Labor Standards Act
HUD -	Housing and Urban Development (Department of)
IHA -	Indian Housing Authority
LCA -	Local Contracting Agency
LDP -	Limited Denial of Participation
0/Т -	Overtime
PHA -	Public Housing Agency
S/T -	Straight-time
SAC -	State Apprenticeship Council/Agency
TDHE -	Tribally-Designated Housing Entity
§ -	Section
¶ -	Paragraph

DAVIS-BACON - RELATED WEB SITES*

- HUD Office of Labor Relations: www.hud.gov/offices/olr
- HUD Regulations: http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR
- HUDClips (HUD Forms and Publications): www.hud.gov/offices/adm/hudclips/index.cfm
- DOL Davis-Bacon and Related Acts Homepage: http://www.dol.gov/whd/contracts/dbra.htm
- DOL Regulations: http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR
- Davis-Bacon Wage Decisions: www.wdol.gov
- DOL Forms: www.dol.gov/whd/programs/dbra/forms.htm

*Web addresses active as of January 2012

Project Wage Rat	U.S. Depart and Urban Office of La					
Project Name:	<u>.</u>	Wage Decision Number/Modification				
Project Number:		Project County:				
Work Classification	Basic Hourly Rate (BHR)	Fringe Benefits	inge enefits Total Laborers Hourly Fringe Wage Rate Benefits			
Bricklayers			\$	Group #	BHR	Total Wage
Carpenters			\$			\$
Cement Masons			\$			\$
Drywall Hangers			\$			\$
Electricians			\$			\$
Iron Workers			\$			\$
Painters			\$	Operators Fringe Benefits:		\$
Plumbers			\$	\$ Group # BHR		Total Wage
Roofers			\$			\$
Sheet Metal Workers			\$			\$
Soft Floor Workers			\$		\$	
Tapers			\$			\$
Tile Setters			\$	Truck Drivers Fringe Benefits:		\$
Other Classifications				Group #	BHR	Total Wage
			\$			
			\$			
			\$			
Additional Classificatio	ons (HUD Foi	rm 4230-A)	<u>^</u>		<u>.</u>	•
Work Classification	Basic Hourly Rate (BHR)	Fringe Benefits	Total Hourly Wage Rate	Date of HUD Subm to DOL	ission	Date of DOL Approval
			\$			
			\$			
			\$			

5(a)(i) require contractors to submit weekly a copy of all payrols to the Federal agency contracting the construction project, accompanied by a signed. Statement of Compliance ¹ indicating that the payrolis are correct and complete and that each baborer is been paid not less than the proper Davis Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that enclose received and finite benefits.

(J9/0)

N CASH	isted in the above referenced payroll has been paid, an amount not less than the sum of the applicable is the amount of the required fringe benefits as listed oted in section 4(c) below.		EXPLANATION										SIGNATURE	VE STATEMENTS MAY SUBLECT THE CONTRACTOR OR LISEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE
(b) WHERE FRINGE BENEFITS ARE PAID I	 Each laborer or mechanic li as indicated on the payroll, basic hourly wage rate plus in the contract, except as n 	(c) EXCEPTIONS	EXCEPTION (CRAFT)							REMARKS			NAME AND TITLE	THE WILFUL FALSFICATION OF ANY OF THE ABO SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION 31 OF THE UNITED STATES CODE.
	(Title)	employed by	tor) and the	hat during the payroll period commencing on the day of	full weekly wages earned, that no rebates have alf of said	from the full	usion have been made either directly or indirectly	suble behaviours as beined in regulations, Fait inder the Copeland Act, as amended (48 Stat. 948, , and described below:			wirred to be submitted for the above period are echanics contained therein are not less than the ation incorporated into the contract; that the conform with the work he performed.	period are duly registered in a bona fide iceship agency recognized by the Bureau of abor, or if no such recognized agency exists in a Training, United States Department of Labor.	PPROVED PLANS, FUNDS, OR PROGRAMS	rates paid to each laborer or mechanic listed in ents of fringe benefits as listed in the contract ppropriate programs for the benefit of such n 4(c) below.
Date	I, (Name of Signatory Party) do hereby state:	(1) That I pay or supervise the payment of the persons	(Contractor or Subcontract	t (Building or Work)	all persons employed on said project have been paid the been or will be made either directly or indirectly to or on beh	// Contractor of Subscripts	veekly wages earned by any person and that no deductio	itotit the full wayes canned by any person, ourer than perimi 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor ur 63 Start. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145),			(2) That any payrolls otherwise under this contract re- correct and complete; that the wage rates for laborers or m applicable wage rates contained in any wage determini classifications set forth therein for each laborer or mechanic	(3) That any apprentices employed in the above apprenticeship program registered with a State apprent Apprenticeship and Training, United States Department of L State, are registered with the Bureau of Apprenticeship and	(4) That:(a) WHERE FRINGE BENEFITS ARE PAID TO A	 in addition to the basic hourly wage the above referenced payroll, paym have been or will be made to a employees, except as noted in section

U.S. Department of Housing and Urban Development Office of Departmental Operations and Coordination Washington, DC 20410

Email: www.OfficeofLaborRelations@hud.gov

Labor Relations Desk Guide LR01.DG





DOCUMENT 00 8801

WAGE DETERMINATION SCHEDULE

General Decision Number: PA190105 02/01/2019 PA105

Superseded General Decision Number: PA20180129

State: Pennsylvania

Construction Type: Building

County: Westmoreland County in Pennsylvania.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification	Number	Publication	Date
0		01/04/2019	
1		01/11/2019	
2		02/01/2019	

ASBE0002-005 08/01/2018

Rates

Fringes

ASBESTOS WORKER/HEAT & FROST INSULATOR MECHANICAL- Duct, Pipe & Mechanical System Insulation and Industrial Work (Including Duct and Pipe).....\$ 40.21

24.72

BOIL0154-007 01/01/2017

	Rates	Fringes	
BOILERMAKER	\$ 40.90	27.27	
BRPA0009-011 12/01/2018			
	Rates	Fringes	
TILE FINISHER	\$ 25.59 \$ 31.30	15.12 19.42	
BRPA0009-051 12/01/2017			
	Rates	Fringes	
BRICKLAYER (Including Pointing, Caulking, Cleaning and Brick Refractory Work) MASON - STONE	\$ 31.55 \$ 31.55	20.76 20.76	
Additional \$0.75 to the base wa	age for Brick	Refractory work	
CARP0142-013 06/01/2018			
	Rates	Fringes	
CARPENTER (Including Acoustical Ceiling Installation, Drywall Hanging, Metal Stud Installation, Floor Laying-Hardwood, Carpet and Vinyl; Form Work, and Scaffold Building)	\$ 33.75	17.03	
CARP2235-007 01/01/2019			
	Rates	Fringes	
PILEDRIVERMAN	\$ 34.30	19.30	
CARP2235-010 06/01/2018			
	Rates	Fringes	
MILLWRIGHT	\$ 40.34	19.16	
ELEC0005-018 12/21/2018			
	Rates	Fringes	
ELECTRICIAN (Alarm Installation, Installation of Sound and Communication R17-077-04 WCHA Loyalhanna Apartment Renovations	00 8802- 2		Prevailing Wage

System and Low Voltage Wiring, HVAC/Temperature 26.34 Controls Installation Only).....\$ 40.76 _____ -----* ENGI0066-040 06/12/2017 Rates Fringes POWER EQUIPMENT OPERATOR Backhoe/Excavator/Trackhoe, Bobcat/Skid Steer/Skid Loader, Bulldozer, Compactor, Crane*, Drill Rig Caissons, Drill, Gradall, Grader/Blade, Man Lift/Outside Elevator, Mechanic, Paver (Asphalt, Aggregate, and Concrete), Scraper, Forklift (Lull)....\$ 34.49 20.15 Broom/Sweeper, Compressor, Concrete Pump, Highlift, Hoist, Pump, Roller, Tugboat, Forklift (ridden or self-propelled)..\$ 29.58 Loader....\$ 34.49 20.15 20.15 Oiler....\$ 27.25 20.15 *Add to Crane rate: Booms 101-150 jibs- Add \$.75 Booms 151-200 jibs- Add \$1.50 Booms 201-251 jibs- Add \$2.25 _____ IRON0003-025 06/01/2018 Rates Fringes IRONWORKER (Ornamental, Reinforcing, Rigger and Structural; Metal Buildings: Metal Siding/Wall Panels Installation).....\$ 34.49 30.71 _____ LABO0125-006 06/01/2014 Rates Fringes LABORER Mason Tender -Cement/Concrete.....\$ 24.34 9.75 _____ LABO0373-001 01/01/2017 Rates Fringes R17-077-04 00 8802- 3 **Prevailing Wage** WCHA Loyalhanna Apartment

Renovations

R17-077-04 WCHA Loyalhanna Apartment Renovations	00 8802- 4		Prevailing Wag
PLUM0354-018 06/01/2017			
PIPEFITTER (Industrial)	\$ 37.88	22.90	
	Rates	Fringes	
PLUM0354-010 06/01/2017			
CEMENT MASON/CONCRETE FINISHER	\$ 30.37	18.89	
	Rates	Fringes	
PLAS0526-015 06/01/2018			
PLASTERER	\$ 27.97	14.26	
	Rates	Fringes	
PLAS0031-016 06/01/2015			
GLAZIER	\$ 29.50	22.96	
	Rates	Fringes	
PAIN0751-006 09/01/2018			
and Sandblaster Only)	\$ 30.78	15.88	
PAINTER (INDUSTRIAL: Brush and Roller Only) PAINTER (INDUSTRIAL: Spray	\$ 26.98	15.65	
	Rates	Fringes	
PAIN0057-034 06/01/2014			
Finishing/Taping)	\$ 27.80	18.75	
PAINTER (Brush, Roller, and Spray, excluding work on Industrial sites)	\$ 26.98	15.65	
	Rates	Fringes	
PAIN0057-033 06/01/2017	·		
LABORER Common or General; Mason Tender- Brick	\$ 22.37	17.60	
LAB01451-001 01/01/2019	Rates	Fringes	
and Ceilings))	\$ 22.60	15.44	
LABORER (Asbestos Abatement (Removal from Floors, Walls, and Ceilings))	\$ 22.60	15.44	

	Rates	Fringes
PLUMBER	\$ 33.83	22.90
PLUM0354-019 06/01/2014		
	Rates	Fringes
PIPEFITTER (Includes HVAC Pipe Installation, Excludes Work on Industrial Sites)	\$ 32.86	21.17
ROOF0037-005 06/01/2018		
	Rates	Fringes
ROOFER (Excludes Metal Roof Installation and Waterproofing)	\$ 31.00	16.42
SHEE0012-011 07/01/2018		
	Rates	Fringes
SHEET METAL WORKER (Includes HVAC Duct and Metal Roof Installation)	\$ 34.47	27.54
* UAVG-PA-0032 01/01/2019		
	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers)	\$ 38.16	21.93
SUPA2011-063 08/20/2014		
	Rates	Fringes
LABORER: Asphalt Raker	\$ 20.92	9.09
LABORER: Landscape	\$ 18.10	0.00
LABORER: Luteman	\$ 21.13	8.23
ROOFER: Waterproofing Only	\$ 23.13	2.51
TRUCK DRIVER: Dump Truck	\$ 23.36	7.60
WELDERS - Receive rate prescrib operation to which welding is i	ed for craft ncidental.	performing

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the

Prevailing Wage

Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations Wage and Hour Division U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

DOCUMENT 00 8840

MINIMUM WAGE NOTICE

(3 PAGES)

EMPLOYEE RIGHTS UNDER THE DAVIS-BACON ACT

FOR LABORERS AND MECHANICS EMPLOYED ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

PREVAILINGYou must be paid not less than the wage rate listed in the Davis-BaWAGESWage Decision posted with this Notice for the work you perform.	con
OVERTIME You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are for exceptions.	w
ENFORCEMENT Contract payments can be withheld to ensure workers receive wage and overtime pay due, and liquidated damages may apply if overtim pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future feder contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil c criminal prosecution, fines and/or imprisonment.	es ne eral
APPRENTICES Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.	er
PROPER PAY If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:	e
Michael L. Washowich	
Westmoreland County Housing Authority	
154 South Greengate Road	
Greensburg, PA 15601	

or contact the U.S. Department of Labor's Wage and Hour Division.



WH 1321 (Revised April 2009)

DOCUMENT 00 9100

ADDENDA (Sample)

PROJECT NO.

Project Name: _____

ADDENDUM NO._____

DATE OF ISSUE: _____ PAGE NO. 1

Notice to All Bidders:

This addendum is hereby made a part of the contract and is to be included therein. The purpose of this addendum is to amend, modify and clarify the contract documents, as follows:

CHANGES TO PREVIOUS ADDENDUM:

CHANGES TO SPECIFICATIONS:

CHANGES TO DRAWINGS:

All bidders on this contract shall give due consideration to the contents of this addendum in the preparation of their Bid and shall so indicate on the Bid Form in the spaces provided. Failure of a bidder to acknowledge receipt of this addendum on his Bid form may be considered sufficient cause for rejection of his bid. It shall be the responsibility of each bidder to assure that all his suppliers and subcontractors are made aware of the contents of this addendum.

Engineer: R.W. Sleighter 1060 Eberly Way Lemont Furnace, PA 15456

Owner: Westmoreland County Housing Authority 154 South Greengate Road, Greensburg, PA 15601

END OF ADDENDUM NO. _____

SECTION 01 1000 SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: WCHA Loyalhanna Apartment Renovations
- B. Owner's Name: Westmoreland County Housing Authority.
- C. Architect's Name: RW Sleighter.

Scope -the project consists of apartment renovations including: new apartment kitchen cabinets, bathroom vanities, bathtub faucets; new flooring in apartments; new lighting, switches and receptacles in kitchens and bathrooms; Accessibility updates to the Community Room; installation of a new roof top unit; electric domestic water heaters for each apartment: exterior building work includes new windows and patio doors, EIFS repairs and painting, and brick masonry cleaning. Site work will include repaying the parking lot, and concrete ADA parking and drop off area.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: Multiple prime contracts, each based on a Stipulated Base Bid Cost.
- B. Contracts will be awarded for these trades:
 - 1. General Construction
 - 2. Mechanical Construction
 - 3. Electrical Construction
 - 4. Plumbing Construction
- C. The work of each trade is identified in the contract documents.

1.03 WORK BY OTHERS

A. Items noted NIC (Not in Contract) are not a part of the Prime Contracts.

1.04 OWNER OCCUPANCY

- A. Owner intends to continue to occupy the non-renovated spaces of the existing building during the entire construction period.
- B. Owner intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
 - 2. Work by Others.
 - 3. Work by Owner.
 - 4. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Time Restrictions:
 - 1. Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
- E. Utility Outages and Shutdown:

- 1. Limit disruption of utility services to hours the building is unoccupied.
- 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
- 3. Prevent accidental disruption of utility services to other facilities.

1.06 WORK SEQUENCE

A. Coordinate construction schedule and operations with Owner and Architect.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 1200 MULTIPLE CONTRACT SUMMARY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Summary of Work for Prime Contracts.
- B. Administrative and Procedural Sections Applicable to each Prime Contract

1.02 PROJECT WORK COVERED BY CONTRACT DOCUMENTS

- A. The prime contracts on this project are as follows:
 - 1. General Construction
 - 2. Mechanical Construction To be performed by the Owner
 - 3. Electrical Construction
 - 4. Plumbing Construction
- B. Work of each separate Prime Contract is identified in the following paragraphs and as indicated on the Contract Drawings. Each Prime Contractor shall familiarize themselves with the description of the work of other Prime Contractors, and shall incorporate into their bid the work that is an appropriate part of their contract. The General Contractor shall be the lead Contractor and shall in general, control the sequencing of the work. Each Prime Contractor shall coordinate their work with work of other Contractors so as not to limit, prohibit or interfere with the progress of other contracts. One or all contracts may be in progress at the time of each contractor's work.

1.03 ADMINISTRATIVE AND PROCEDURAL SECTIONS

- A. Applicable to each Prime Contract
 - 1. 00 0030 Advertisement For Bid
 - 2. 00 2100 Instructions To Bidders
 - 3. 00 4110 Bid Form
 - 4. 00 4313 Bid Bond
 - 5. 00 4323 Alternates
 - 6. 00 4514 Non-Collusive Affidavit
 - 7. 00 4515 Non-Discrimination Affidavit
 - 8. 00 4517 Workmen's Compensation Act
 - 9. 00 4600 Contractor's Qualifications Statement
 - 10. 00 5200 Standard Agreement Between Owner & Contractor
 - 11. 00 6113 Performance & Payment Bond
 - 12. 00 6276 Application & Certificate For Payment
 - 13. 00 6519 Contractor's Affidavit Of Release Of Liens
 - 14. 00 7200 General Conditions
 - 15. 00 8800 Davis Bacon Wages
 - 16. 00 8801 Wage Determination
 - 17. 00 8840 Minimum Wage Notice
 - 18. 00 9100 Addenda
 - 19. 01 1000 Summary
 - 20. 01 1200 Multiple Contract Summary
 - 21. 01 2000 Price & Payment Procedures
 - 22. 01 2200 Unit Prices
 - 23. 01 2300 Alternates
 - 24. 01 3000 Administrative Requirements
 - 25. 01 3213 Scheduling and Phasing
 - 26. 01 3216 Construction Progress Schedule
 - 27. 01 3300 Submittals
 - 28. 01 3500 Safety
 - 29. 01 4000 Quality Requirements

- 30. 01 4216 Definitions
- 31. 01 5000 Temporary Facilities & Controls
- 32. 01 5500 Vehicular Access & Parking
- 33. 01 5713 Temporary E&S Control
- 34. 01 6000 Product Requirements
- 35. 01 7000 Execution & Closeout Requirements
- 36. 01 7800 Closeout Submittals

1.04 GENERAL CONSTRUCTION

- A. Contract work is specified in the following sections:
 - 1. 02 4100 Demolition
 - 2. 03 3000 Cast-In-Place Concrete
 - 3. 03 3536 Stamped Concrete Overlay
 - 4. 03 5400 Cast Underlayment
 - 5. 06 1000 Rough Carpentry
 - 6. 07 1200 Urethan Membrane Traffic System
 - 7. 07 2119 Foamed In Place Insulation
 - 8. 07 5323 Ethylene-Propylene-Diene-Monomer Roofing (epdm)
 - 9. 07 6200 Sheet Metal Flashing & Trim
 - 10.07 9200 Joint Sealants
 - 11.08 1113 Hollow Metal Door Frames
 - 12.08 1423 Aluminum Clad Wood Doors
 - 13.08 2100 Flush Wood Doors
 - 14.08 4313 Aluminum Framed Storefronts
 - 15.08 5213 Aluminum Clad Wood Windows
 - 16.08 7100 Door Hardware
 - 17.08 8000 Glazing
 - 18.09 2116 Gypsum Board Assemblies
 - 19.09 3000 Tiling
 - 20.09 5100 Acoustical Ceilings
 - 21.09 6514 Resilient Wall Base
 - 22.09 6519 Resilient Tile Flooring
 - 23.09 6813 Tile Carpeting
 - 24.09 6816 Sheet Carpeting
 - 25.09 9123 Painting
 - 26.10 0916 Closet Wire Shelving System
 - 27.10 1400 Signage
 - 28.10 2601 Wall And Corner Guards
 - 29.10 2800 Toilet And Bath Accessories
 - 30.11 3100 Residential Appliances
 - 31. 12 3530 Residential Casework
 - 32. 31 1000 Site Clearing
 - 33. 31 2200 Grading
 - 34. 31 2316 Excavation
 - 35. 31 2323 Fill
 - 36. 32 1216 Asphalt Paving
 - 37. 32 1313 Concrete Paving
 - 38. 31 1713 Parking Bumpers
 - 39. 32 1723 Painted Pavement Markings
 - 40. 32 1726 Tactile Warning Surfacing
 - 41. 32 3000 Site furnishings
 - 42. 32 9219 Seeding
 - 43. 32 9300 Plants
- B. Contract work is identified on the Architectural drawings. All drawings are issued with the General contract for reference and coordination with other trades.

1.04 EXTERIOR RESTORATION

- A. Contract work is specified in the following sections:
 - 1. 04 0100 Maintenance of Masonry
 - 2. 07 2400 Exterior Insulation & Finish Systems
 - 3. 09 8800 Protective, Anti-Carbonation, Crack-Bridging Coating
 - 4. 09 9123 Painting
- B. Contract work is identified on the drawings. All drawings are issued with the Exterior Restoration contract for reference and coordination with other trades.

1.05 MECHANICAL

- A. Contract work that is specified in the following sections.
 - 1. 23 0000 HVAC Specifications
- B. Contract work is identified on the Mechanical drawings. All drawings are issued with the Mechanical contract for reference and coordination with other trades.

1.07 PLUMBING

- A. Contract work that is specified in the following sections.
 - 1. 22 0500 Common Works Results for Plumbing
 - 2. 22 0719 Plumbing Piping Insulation
 - 3. 22 1116 Domestic Water Piping
 - 4. 22 1316 Sanitary Waste and Vent Piping
 - 5. 22 2023 Facility Natural Gas Piping
 - 6. 22 3300 Electric Domestic Water Heaters
 - 7. 22 4000 Plumbing Fixtures
- B. Contract work is identified on the Plumbing drawings. All drawings are issued with the Plumbing contract for reference and coordination with other trades.

1.06 ELECTRICAL

- A. Contract work that is specified in the following sections.
 - 1. 26 0001 Minor Electrical Demolition
 - 2. 26 0519 Low-Voltage Electrical Power Conductors & Cables
 - 3. 26 0533 Conduit For Electrical Systems
 - 4. 26 2726 Wiring Devices
 - 5. 26 2816 Enclosed Circuit Breakers
 - 6. 26 5000 Interior Lighting
 - 7. 26 5600 Exterior Lighting
- B. Contract work is identified on the Electrical drawings. All drawings are issued with the Electrical contract for reference and coordination with other trades.

1.08 SUPPLEMENTAL INFORMATION

A. Each Prime Contractors shall be responsible for their own demolition as well as patching and repairing areas disturbed by their work.

SECTION 01 2000

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

1.02 SCHEDULE OF VALUES

- A. Form to be used: AIA G702 & G703
- B. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in triplicate within 15 days after date of Owner-Contractor Agreement.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Monthly.
- B. Form to be used: AIA G702 & G703
- C. Forms filled out by hand will not be accepted.
- D. Execute certification by signature of authorized officer.
- E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- F. Submit three copies of each Application for Payment.
- G. Include the following with the application:
 - 1. Transmittal letter as specified for Submittals in Section 01 3000.
 - 2. Application for Payment (AIA G702 & G703)
 - 3. Construction progress schedule, revised and current as specified in Section 01 3000.
 - 4. Schedule of Change Orders
 - 5. Schedule of Materials Stored
 - 6. Summary of Materials Stored
 - 7. Construction Progress Schedule
 - 8. Contractor Payment Certification
 - 9. Copy of approved Schedule of Values
 - 10. Copy of the previous Payment Application
- H. Certified Payrolls must be submitted on a weekly basis to the owner. Applications for payment will not be approved without all certified payrolls submitted.

1.04 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect or Owner will issue instructions directly to Contractor.
- B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within two days.
- D. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and

a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.

- E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation as approved by the Architect.
 - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
 - 3. For pre-determined unit prices and quantities, the amount will based on the fixed unit prices.
 - 4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- F. Substantiation of Costs: Provide full information required for evaluation.
 - 1. Provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
 - a. The Owner or Engineer shall verify all Time and Materials used on a daily basis.
- G. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- H. Promptly revise progress schedules to reflect any change in Contract Time, revise subschedules to adjust times for other items of work affected by the change, and resubmit.
- I. Promptly enter changes in Project Record Documents.

1.05 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 7000.
 - 2. Release of Certification of Final Payment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2200 UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. List of unit prices, for use in preparing Bids.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

1.02 COSTS INCLUDED

A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, demolition, application or installation of an item of the Work; overhead and profit.

1.03 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.04 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Owner.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. Measurement by Area: Measured by square dimension using mean length and width or radius.
- E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

1.05 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.
- B. Quantities listed in the Contract Documents are approximate only. Contract Amount shall be adjusted by change order using unit prices listed for actual quantities of Work performed.
- C. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from the transporting vehicle.
 - 4. Products placed beyond the lines and levels of the required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected Products.

1.06 DEFECT ASSESSMENT

- A. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct one of the following remedies:
 - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Owner.
 - 2. The defective Work will be partially repaired to the instructions of the Owner, and the unit price will be adjusted to a new unit price at the discretion of Owner.

B. The authority of Owner to assess the defect and identify payment adjustment is final.

1.07 SCHEDULE OF UNIT PRICES

A. Base Repair

 The General Contractor is to perform <u>850</u> square yards of pavement Base Repair per Detail 2/C-500. The general contractor shall include this work in the base bid. The square foot measurement is per square yard of pavement area.

B. Paving Membrane

1. The General Contractor is install <u>1,400</u> square feet of Paving Membrane per Detail 1/C-500. The general contractor shall include this repair in the base bid. The square foot measurement is per square foot of paving membrane installed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 3000 ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.
- D. Progress photographs.
- E. Coordination drawings.
- F. Submittals for review, information, and project closeout.

1.02 RELATED REQUIREMENTS

- A. Section 01 3216 Construction Progress Schedule: Form, content, and administration of schedules.
- B. Section 01 3300 Submittals
- C. Section 01 7000 Execution and Closeout Requirements: Additional coordination requirements.
- D. Section 01 7800 Closeout Submittals: Project record documents.

1.03 PROJECT COORDINATION

- A. Cooperate with the Owner in allocation of mobilization areas of site; for field offices and sheds, for storage areas, access, traffic, and parking facilities.
- B. During construction, coordinate use of site and facilities through the Owner.
- C. Comply with Owner and Architect's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- D. Comply with instructions of the Owner for use of temporary utilities and construction facilities.
- E. Coordinate field engineering and layout work under instructions of the Architect.
- F. Make the following types of submittals to Architect:
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.

1.04 ADMINSTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to its full-time on site Project Superintendent, each Prime Contractor shall provide other administrative and supervisory personnel, as required for proper performance of the work. Include special personnel required for coordination of operations with other Prime Contractors.
- B. Project Coordinator: The Contractor for General Construction shall provide a fulltime Superintendent/Project Coordinator, experienced in administration and supervision of building construction, including plumbing, mechanical, and electrical work. The Superintendent/Project

Coordinator shall be authorized to act as the coordinator of construction activities between the separate Prime Contractors.

- 1. Construction activities requiring coordination by the Project Coordinator include, but are not limited to, the following:
 - a. Scheduling and sequencing the Work.
 - b. Sharing access to work spaces.
 - c. Installations.
 - d. Protection of each other's work.
 - e. Cutting and patching.
 - f. Selections for compatibility.
 - g. Coordination drawings.
 - h. Inspections and tests.
 - i. Temporary services and facilities.
 - j. Daily project clean up activities.
 - k. Quality Control.
- C. Staff Names: Within 5 calendar days of commencement of construction operations, each Prime Contractor shall submit a list of its principal staff assignments, including the Superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.

1.05 CONTRACTOR COORDINATION

- A. The General Contractor is designated as the Lead Prime Contractor for the Project. Each Prime Contractor shall coordinate its construction activities with those of the other prime contractors and other entities involved to assure efficient and orderly installation of each part of the work. Each Prime Contractor shall coordinate its operations with operations included under different Sections of the Specifications that depend on each other for proper installation, connection, and operation.
- B. Each Prime Contractor shall schedule its construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
- C. Where availability of space is limited, each Prime Contractor shall coordinate installation of different components with other prime contractors to assure maximum accessibility for required maintenance, service, and repair.
- D. Each Prime Contractor shall make adequate provisions to accommodate items scheduled for later installation.
- E. Each Prime Contractor shall participate in these coordination requirements. Each Prime Contractor shall advise the Owner and Engineer of overall coordination progress. When necessary, such as in congested spaces where multiple prime contracts are involved, the prime contractors shall meet with the Owner and Engineer and all other prime contractors involved to resolve critical coordination areas. Specific responsibilities are assigned to each prime contractor. The General Contractor and other Prime Contractors shall prepare Coordination Drawings as necessary to verify conflicts prior to installation.
- F. In the event of coordination disputes or questions, the prime contractors involved shall submit the question or dispute to the engineer. The engineer will provide specific direction relating to the question or dispute. Direction provided to prime contractors in response to questions or disputes shall be adhered to by all prime contractors. The Owner will not consider requests for additional time or coordination, questions, or disputes. In all matters pertaining to coordination, the decision of the engineer shall be final.
- G. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate contractors where coordination of their Work is required.

- H. Administrative Procedures: Each Prime Contractor shall coordinate scheduling and timing of its required administrative procedures with other construction activities and activities of other prime contractors to avoid conflicts and assure orderly progress of the work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project closeout activities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Prime Contractors.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, Schedule of Values, and Progress Schedule.
 - 5. Designation of personnel representing the parties to Contract, Owner and Architect.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
- D. Owner will record minutes and distribute copies within five days after meeting to participants, with copies to Architect, Owner, Contractors, and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

- A. Schedule meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
 - 1. Contractor.
 - 2. Owner.
 - 3. Architect.
 - 4. Contractor's Superintendent.
 - 5. Major Subcontractors.
- C. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements and occupancy prior to completion.
 - 3. Construction facilities and controls provided by Owner.
 - 4. Security and housekeeping procedures.
 - 5. Schedules.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

- A. Owner will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- B. Attendance Required:1. Contractor.

- 2. Owner.
- 3. Architect.
- 4. Special Consultants.
- 5. Contractor's Superintendent.
- 6. Major Subcontractors.
- C. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede, or will 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. Other business relating to Work.
- D. Contractors shall provide a written report on past weeks work at each job conference.
- E. Contractors shall provide a written report on projected work for the next week at each job conference.
- F. Owner will record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, Contractors, and those affected by decisions made.

3.04 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 3216

3.05 PROGRESS PHOTOGRAPHS

- A. Submit new photographs at least once a month, within 3 days after exposure.
- B. Photography Type: Digital; electronic files.
- C. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Architect.
- D. In addition to periodic, recurring views, take photographs of each of the following events:
 - 1. Completion of site clearing.
 - 2. Excavations in progress.
 - 3. Foundations in progress and upon completion.
 - 4. Structural framing in progress and upon completion.
 - 5. Final completion, minimum of ten (10) photos.
- E. Views:
 - 1. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.
 - 2. Consult with Architect for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
 - 5. Point of View Sketch: Provide sketch identifying point of view of each photograph.
- F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 1. Delivery Medium: Via email.
 - 2. File Naming: Include project identification, date and time of view, and view identification.
 - 3. Point of View Sketch: Include digital copy of point of view sketch with each electronic submittal; include point of view identification in each photo file name.

4. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.06 COORDINATION DRAWINGS

- A. Provide information required by Architect for preparation of coordination drawings.
- B. Review drawings prior to submission to Architect.
- C. Provide input from all Prime Contractor involved.
- D. A. The General, Mechanical, Electrical, & Plumbing Contractors shall coordinate their work to ensure that the project progresses without interruption. Conflicts of equipment shall be resolved prior to installation, and the required clear equipment working spaces shall be maintained (and applicable building codes shall be met). The engineer shall be notified immediately of any discrepancies.

3.07 SUBMITTALS FOR REVIEW - REFER TO SECTION 01 3300 SUBMITTALS END OF SECTION

SECTION 01 3213

SCHEDULING AND PHASING

PART 1 GENERAL

1.01 SUBSTANTIAL COMPLETION

- A. Total time for **Substantial Completion** of the contract is **275 calendar days** from the written notice to proceed.
- B. Substantial Completion is the stage in the progress of the Work when the Work is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The intended use of this project is delivering apartments ready for occupancy and rent by the owner.

1.02 FINAL COMPLETION

- A. Total time for Final Completion of the contract is **290 calendar days** from the written notice to proceed.
- B. Final Completion is the stage when all Work is complete in accordance with the Contract Documents, the owner and architect have accepted the Work, and all Closeout documents have been completed and accepted by the owner.

1.03 LIQUIDATED DAMAGES

- A. The damages incurred by the Owner due to the Contractor's failure to complete the Work, or portions thereof, designated in the Contract Documents, including any extensions thereof under the Contract Documents, shall be in the amount set forth below for each consecutive calendar day beyond each Specific Date (Sunday and all holidays included) for which the Contractor shall fail to complete the Work or designated portion thereof designated in this section.
- B. The amount of liquidated damages provided in the Contract Documents shall not be considered a penalty and shall compensate the Owner only for the Owner's inability to use or otherwise have available, the Project or any portion thereof for its intended purpose by the Dates set forth in the Contract Documents.
- C. If, during the course of the Contractor's performance of the Work, the Contractor shall fail to complete the Work, or portions thereof, in accordance with Specific Dates or the Contract Time, the Owner may retain the estimated amount of liquidated damages for which the Contractor shall be liable to the Owner under the Contract Documents, from amounts which become payable or are otherwise certified as payable to the Contractor under the Contract Documents.
- D. In the event that the Work must be conducted beyond the normal working hours specified or if the Project is not completed within the specified duration, the Contractors shall reimburse the Consultants (A/E, etc.) for all of their expenses. Expenses shall be calculated at the cost times 2.75 on labor, and costs times 1.15 on all other items.
- E. Liquidated Damages will be assessed as follows:
 - 1. Substantial Completion = **\$250.00 per day** for each day the project is not substantially complete beyond the date established for Substantial Completion.
 - 2. Final Completion = **\$250.00 per day** for each day the project is not at Final Completion beyond the date established for Final Completion.
 - 3. If the project is not Substantially complete and Final completion is not achieved in the specified times, then both liquidated damage costs shall apply simultaneously.
 - 4. If the owner incurs additional damages as a result of the project not being either Substantially Complete or achieving Final Completion within the required dates, the Contractor shall also be liable for these costs.

1.04 SCHEDULING

A. The General Contractor must provide a detailed project schedule indicating all the work activities in accordance with Section 01 3216.
B. The schedule must be reviewed and approved by the owner and engineer prior to beginning construction.

1.05 WEATHER DELAYS

- A. Contractors shall expect and incorporate into the schedule delays due to weather.
- B. In extreme cases, such as natural disasters, weather delays may be accepted as justification for a contract time extension, however time extensions will not be accepted for normal weather conditions.

1.06 WORK HOURS

- A. Contractors shall include all necessary overtime, weekend, holiday, and second and/or third shift work to complete the project within the specified project duration.
- B. No extension of contract length or contract cost will be allowed for contractors to work additional hours.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 3216

CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, with network analysis diagrams and reports.

1.02 RELATED SECTIONS

- A. Section 01 1000 Summary: Work sequence.
- B. Section 01 3213 Scheduling and Phasing

1.03 SCHEDULE COORDINATION

- A. Multiple Prime Contracts: The General Contractor shall establish the overall schedule. The other Prime Contractors shall provide their schedule to the General Contractor for inclusion into the overall schedule.
- B. The General Contractor is responsible for maintenance and updates to the schedule throughout the project, including updates of the other Prime Contractors.
- C. The Prime Contractors are responsible to provide updates to the General Contractor a minimum of five (5) days prior to planned schedule submittals.

1.04 SUBMITTALS

- A. Within 5 days after date of Agreement, submit preliminary schedule to the Engineer for review.
- B. If preliminary schedule requires revision after review, submit revised schedule within 5 days.
- C. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- D. Within 5 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment, or as requested by the Owner or Engineer.
- F. Submit under transmittal letter form specified in Section 01 3000 Administrative Requirements.

1.05 QUALITY ASSURANCE

A. Contractor's Administrative Personnel: 5 years minimum experience in using and monitoring CPM schedules on comparable projects.

1.06 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a preliminary network diagram.

3.02 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.

- D. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- E. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- F. Provide legend for symbols and abbreviations used.

3.03 NETWORK ANALYSIS

- A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
- B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
- C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
 - 1. Preceding and following event numbers.
 - 2. Activity description.
 - 3. Estimated duration of activity, in maximum 15 day intervals.
 - 4. Earliest start date.
 - 5. Earliest finish date.
 - 6. Actual start date.
 - 7. Actual finish date.
 - 8. Latest start date.
 - 9. Latest finish date.
 - 10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
 - 11. Monetary value of activity, keyed to Schedule of Values.
 - 12. Percentage of activity completed.
 - 13. Responsibility.
- D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.
- E. Required Reports: List activities in sorts or groups:
 - 1. By preceding work item or event number from lowest to highest.
 - 2. By amount of float, then in order of early start.
 - 3. Listing of activities on the critical path.

3.04 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, and resubmit within 5 days.

3.05 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Update diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Final Completion.
- F. Submit reports required to support recommended changes.

G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect including the effects of changes on schedules of separate contractors.

3.06 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

SECTION 01 3300 SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Submittal Log.
- B. Approval of Manufacturers, Suppliers and subcontractors.
- C. Approval of Samples.
- D. Approval of Shop Drawings.
- E. Substitutions.

1.02 PROJECT SUBMITTAL LOG

- A. The Contractor shall furnish to the Engineer, within thirty (30) days after the contract award date, one (1) copy of a Project Submittal Log, in chart form. The Project Submittal Log form shall be coordinated with the construction schedule to prevent any delays. The schedule shall prioritize materials and take into account manufacturing lead times. Failure to submit and maintain the submittal schedule must be identified in writing to the Owner/Engineer and may result in holding payment to the Contractor.
 - 1. The Project Submittal Log shall be comprehensive to include, but not be limited to, the following types of submittals:
 - a. Shop Drawings
 - b. Catalog Data
 - c. Samples
 - d. Schedules
 - e. Charts
 - f. Equipment Lists
 - g. Mock-Up Panels
 - h. Tests and Test Reports
 - i. Local, State, and Federal Agency Permits
 - j. Local, State, and Federal Agency Approvals
 - k. Independent Agency Reports and Approvals
 - I. Miscellaneous Items
 - m. Operating and Maintenance Instructions
 - n. Certificates
 - o. Warranties and Guarantees
 - p. Project Record Documents
 - q. Final Documents
 - r. Owner's Manual
 - s. Certification Forms
 - t. Applications for Payments
 - u. Performance Bonds
 - v. Payment Bonds
 - 2. The Project Submittal Log shall include, but not limited to, the following chart columns:
 - a. Specification Number
 - b. Description
 - c. Number of copies
 - d. To A/E
 - e. Date from A/E
 - f. Date to Contractor
 - g. Actions Taken
 - h. Remarks

1.03 APPROVAL OF MANUFACTURERS, SUPPLIERS AND SUB- CONTRACTORS

A. Submit for approval within ten (10) days after the contract award, on the Contractor's letterhead, a complete list of manufacturers, suppliers and sub-contractors for all major items of material, equipment, or systems to be used, including complete and accurate name, address and telephone numbers.

1.04 SUBMITTAL PROCEDURES

- A. Each submittal shall include a single item or element of construction. A Submittal Cover Sheet, on attached form, shall be completed, signed and certified by the Contractor for EACH submittal. The Engineer will not accept submittals including multiple items or elements of construction. Submittals not meeting this procedure requirement may be returned with No Action Taken. No extension of Contract Time will be authorized due to failure to comply with this procedure.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delays.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittal for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - b. Be advised that all interior finishes will be reviewed together and finally determined after receipt of all shop drawings, product data and samples which pertain to the interior finish color selections and related equipment.
 - c. Be advised that all exterior finishes and site elements will be reviewed together and finally determined after receipt of all shop drawings, product data and samples which pertain to the exterior finish color selections and related equipment.
 - 3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for submittals.
 - a. Allow a minimum of thirty (30) working days for review. Addition time may be required for further review and/or coordination with consultants and subsequent submittals as determined by Engineer.
 - b. If a resubmittal is necessary, process the same as the original submittal.
 - c. No extension of Contract Time will be authorized because of failure to transmit submittals to Engineer sufficiently in advance of Work to permit processing.
- C. Submittal Preparation: The Engineer will not accept submittals received without the attached Submittal Cover Sheet. The Contractor shall stamp the Submittal Cover Sheet with a uniform action stamp. The Contractor shall mark the stamp appropriately to indicate the action taken. Submittal shall be pre-reviewed by the Contractor PRIOR to submittal to Engineer for review.
 - 1. Use the Submittal Cover Sheet attached at the end of this Section for all submittals.
 - 2. Complete all information required on Submittal Cover Sheet failure to do so may result in return of the submittal with No Action Taken. No extension of Contract Time will be authorized because of failure to comply with this procedure.
 - 3. Contractor's Transmittal: The Engineer will not accept submittals received from sources other than the Contractor.
 - 4. Contractors shall provide all submittals electronically in PDF format.
 - 5. Following approval of submittals, the Contractor shall provide hard copies of the approved submittals to the owner.

1.05 SUBMITTALS

- A. SHOP DRAWINGS
 - 1. Submit newly prepared information drawn accurately and to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents or copy standard information

as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

- 2. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
 - a. Dimensions.
 - b. Identification of products and materials included by sheet and detail number.
 - c. Notation of dimensions established by field measurement.
 - d. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8 ½ by 11 inches but no larger than 30 by 42 inches.
 - e. Maintain a complete set of shop drawings on site during construction.
 - f. Maintain a set of marked up Shop drawings as part of the project record documents to be turned over to the Owner at Contract Closeout.
 - g. Do not use Shop Drawings without an appropriate final stamp indicating action taken.
- B. PRODUCT DATA
 - 1. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturers installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams. And performance curves.
 - 2. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
 - g. Maintain a complete set of Product Data on site during construction.
 - h. Maintain a set of marked up Product Data as part of project record documents to be turned over to Owner at Contract Closeout.
 - i. Do not use Product Data without an appropriate final stamp indicating action taken.
- C. Action Stamp: The Contractor will stamp each sheet of Submittal with a uniform, action stamp. The Contractor shall mark the stamp appropriately to indicate the action taken.
- D. Distribution: Furnish copies of final approved Submittal to installers, subcontractors, suppliers, manufacturers, fabricators, an all others required for performance of construction activities.
- E. All required shop drawings and catalog data must be submitted within 30 days of the first official job meeting.

1.06 SAMPLES

- A. Where required by individual specification sections, submit full-sized, fully fabricate Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
 - 1. Mount or display Samples in the manner to facilitate review of qualities indicated. Prepare Samples to match the Engineer's sample. Include the following:
 - a. Specifications Section number and reference.
 - b. Generic description of the Sample.
 - c. Sample source.
 - d. Product name or name of manufacturer.
 - e. Compliance with recognized standards.
 - f. Availability and delivery time.
 - g. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of

these characteristics between the final submittal and the actual component as delivered and installed.

- 1) Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least 3 multiple units that show approximate limits of the variation.
- 2) Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
- Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial completion.
- h. Submittal: Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices.
- i. The Engineer will review and return preliminary submittals with the Engineer's notation, indicating selection and other action.
 - 1) Refer to Submittals Procedures for coordination of sample Submittals.

1.07 ENGINEER'S ACTION

- A. Except for submittal for record or information, where action and return is required, the Engineer will review each submittal, mark to indicate action taken, and return promptly.
 - 1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Engineer will stamp each submittal wit a uniform, action stamp. The Engineer will mark the stamp to indicate the action taken, as follows:
 - 1. "NO EXCEPTION TAKEN": The Work covered by the submittal may proceed without further submittal provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
 - 2. REJECTED": Do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery or other activity. Do not resubmit a revised copy; prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action
 - 3. "SUBMIT SPECIFIED ITEM": Do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery or other activity. Prepare a new submittal indicating specified material; resubmit without delay.
 - 4. "MAKE CORRECTIONS NOTED": Contractor shall address all notations and proceed with work provided it complies with the Contract Documents. Final payment depends on that compliance.
 - 5. "REVISE AND RESUBMIT": Do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
 - 6. "RESUBMISSION NOT REQUIRED": The Work covered by the submittal may proceed provide it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
- C. Unsolicited Submittals: The Engineer will take no action on unsolicited submittals.

1.08 SUBSTITUTIONS

- A. Substitutions: Products considered to be able to perform the same function but not necessarily have the same design, arrangement, details, utility requirements and/or dimensions. Changes in products, materials, and equipment required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:
 - 1. Revisions to the Contract Documents requested by the Owner or Architect.
 - 2. Specified options of products or "approved equals" as permitted and included in the Contract Documents.

- 3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.
- B. Substitutions
 - 1. Substitution Request: The Architect will consider requests for substitutions if received within 60 days after Notice to Proceed. Requests received more than 60 days after Notice to Proceed may be considered or rejected at the discretion of the Architect. The Architect will only consider requests for substitution submitted by the Prime Contractor whose work is involved. No substitution requests will be considered from manufacturer's representatives or product vendors unless submitted through a prime contractor. No substitution requests will be considered during the bid period. Bids shall be based on products from one of the manufacturers specified or an "or equal" product. Bidders shall submit products not indicated in the Specifications at their own risk. The Architect shall determine if a proposed product is equal to a specified product. Furthermore, regardless as to whether or not a manufacturer is listed in the Specification, that manufacturer or product is not relieved of its obligations to meet the technical requirements of the specified intent.
 - a. Transmit each request for substitution for consideration to the Architect's FTP Site; if hard copies or samples must be submitted as part of the substitution request, transmit a minimum of two (2) duplicate copies. Requests shall be on the Substitution Request Form found at the end of this Section. Requests not meeting this procedural requirement will be returned with no action taken.
 - b. Identify the product to be substituted in each request. Include related Specification Section and Drawing numbers.
 - c. Respond to all of the following items. Attach to the Substitution Request Form:
 - Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and/or separate Contractors, that will be necessary to accommodate the proposed substitution.
 - 2) A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - 3) Product Data, including Drawings and descriptions of products.
 - 4) Samples, where applicable or requested.
 - 5) A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on the overall Contract Time.
 - 6) Cost information, including a proposal of the net change, if any in the Contract Sum.
 - 7) The Contractor's certification that the proposed substitution conforms to all requirements of the Contract Documents in every respect and is appropriate for the applications indicated.
 - 8) The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
 - (a) The Contractor's Certification that all costs of other Prime Contractors which are covered by the substitution will be borne by the substituting Contractor.
 - d. Architect's Action: The Architect will notify the Contractor of acceptance or rejection of the substitution within two (2) weeks of receipt of the request. If necessary, the Architect will request additional information or documentation for evaluation within one (1) week of receipt of a request.
 - Use the product specified if the Architect cannot make a decision on the use of a proposed substitute within the time allocated. Following acceptance of the substitution, the Contractor shall submit related information and product data in accordance with Section 01300- Submittals.

- 2. Conditions for Consideration: The Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. Requests will be returned with no action taken if none of the following conditions are satisfied.
 - a. Extensive revisions to the Contract Documents are not required.
 - b. Proposed changes are in keeping with the general intent of the Contract Documents.
 - c. The specified product cannot be provided within the Contract Time. The Architect will not consider the request if the product cannot be provided as a result of the Contractor's failure to pursue the Work promptly.
 - d. The requested substitution offers the Owner a substantial advantage, in cost, time, or energy conservation.
 - e. The specified product cannot receive necessary approval by a governing authority.
 - f. The specified product cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
 - g. The specified product cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
 - h. The specified product cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.
- 3. Conditions for Acceptance: Following evaluation by the Architect and in accordance with a Change Order, the Contractor may make a substitution only with the consent of the Owner.

PART 2 PRODUCTS 2.01 NOT USED. PART 3 EXECUTION 3.01 NOT USED.

SECTION 01 3500 SAFETY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. General: This Section specifies the required safety procedures for this Project.
- B. It is recognized that the safety of all personnel is the responsibility of each Prime Contractor involved in the construction of this Project. It is the contractual obligation of each Contractor to adhere to all requirements of the Occupational Health and Safety Act (OSHA), as well as Local, State, and Federal safety rules and regulations. Each Prime Contractor shall assure the safety of their personnel by providing all protection and safety devices, covers, etc. as they relate to the safe conduct of their work in accordance with all Local, State and Federal regulations. Each Prime Contractor is responsible for any safety requirements that are contractually those of any Contractor.
- C. The General Contractor shall be designated as the "Lead Contractor" with respect to jobsite safety. Responsibilities and authority of the General Contractor shall be as follows:
 - 1. This Contractor will be responsible to inspect and maintain safe working conditions on the jobsite.
 - 2. Where the work of one (1) Contractor places another Contractor's workers in jeopardy, the "Lead Contractor" shall direct and coordinate the effort of the Contractors to ensure that jobsite safety is maintained.
 - 3. This Contractor will maintain a "competent person" on site at all times designated to make safety inspections and to serve as the designated representative in charge of safety during the inspection by OSHA employees.
 - 4. This Contractor may direct another Contractor to make corrections in the event of a safety violation. Failure of another Contractor to take prompt action (within 24 hours following written notice) to correct a safety violation will empower this Contractor to make the necessary corrections and to receive full compensation for such corrections directly from the Owner. The Owner will verify and provide documentation of time and material expended to make corrections and in turn will recover the amount of expense from the offending Contractor through a deduct Change Order.
 - 5. This Contractor's responsibilities and corresponding authority will be as defined in the General Conditions of the Contract for Construction.
 - 6. The individual Prime Contractors will maintain primary responsibility for the safety of their workers. The "Lead Contractor" will serve to identify areas of concern and will endeavor to accomplish required corrections through cooperation of the other Prime Contractors. In the event this effort is unsuccessful, the "Lead Contractor" will take action as defined above.
 - 7. The Owner will make payment to the "Lead Contractor" when corrective action has been taken on behalf of an offending Contractor, and the "Lead Contractor" has provided appropriate documentation in accord with contract modification procedures.
 - 8. All Contractors shall provide regular and periodic safety inspections and reports. Inspections and reports shall be performed on a Daily basis.
 - 9. Each Prime Contractor shall provide a safety representative who is trained in First Aid and CPR.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 ACCIDENTS

A. The Contractor shall notify the Owner of any personal injury that could require medical treatment of any Contractor or their subcontractor's employees at the project site. Also, any damage to property arising in connection with the Contractor's performance should be told to the Owner as promptly as possible after the occurrence of such injury or damage but at the maximum 24 hours. Within 48 hours of such occurrence, the Contractor shall furnish to the Owner a complete written report of such injury or damage. Accident Reports shall include specific actions taken by the Contractor to preclude recurrence of similar incidents.

3.02 EMERGENCY DATA

- A. Each Contractor shall provide the Owner with the following emergency data prior to beginning work at the project site:
 - 1. Emergency care facility to be utilized, address and telephone number.
 - 2. Insurance company and local agent/name, address and telephone number.
 - 3. Detailed description of overall corporation or company Safety Program.
 - 4. Employees qualified in type of first aid, list employee and associated skill.
 - 5. Detailed description of specifically tailored job site safety program.
 - 6. Identify corporate and job site safety officer.
 - 7. Submit weekly TOOL BOX SAFETY TALK program/meeting minutes including:
 - a. Day of week.
 - b. Time of day.
 - c. Location.
 - d. Attendance record.
 - e. Agenda.
 - f. Unsafe items previously discussed, date of correction.
 - g. Identify on-site personnel with FIRST AID training.
 - h. All applicable MSDS Program sheets. (Include numbered pages and Table of Contents.
 - i. Submit completed hazardous substance survey form.
 - j. Review project "Emergency Response Plan" with the Owner.

3.03 SAFETY AGREEMENT

- A. The Contractor shall review and comply with the following Safety Agreement before beginning work:
 - 1. As a Contractor under this Contract, you have, by accepting this Contract, obligated yourself to conduct all your operations within this Safety Agreement.
 - 2. The Contractor agrees that the prevention of accidents to employees engaged in the Work under this Agreement is the responsibility of the Contractor.
 - 3. The Contractor agrees to comply with all laws, regulations and codes concerning safety as shall be applicable to the Work and to the safety standards established during the progress of the Work. When so ordered, the Contractor agrees to stop any part of the Work which the "Lead Contractor" or any other applicable agency may deem unsafe until corrective measures satisfactory to the Owner and in accordance with the applicable Federal and/or State regulations have been taken and further agrees to adopt such corrective measures, the Owner may elect to hire an entity, perform the corrections and deduct the cost from payments due or to become due the Contractor. Failure on the part of the Owner to stop unsafe practices shall in no way relieve the Contractor of his responsibility.
 - 4. The Contract realizes that an effective accident prevention program is to the mutual benefit of all Contractors through improved employee and public relations and through increased efficiency and production. Further, no accident prevention activity can be truly

effective without the sincere cooperation of each Contractor performing on the site. Your attention is directed, but not limited to the following items:

- B. Housekeeping
 - 1. Indiscriminate accumulations of debris, waste or scrap in work areas will not be permitted. (Areas will be designated for storage or disposal). All materials, tools and equipment must be stored in an orderly manner in designated areas.
- C. Personal Protection Equipment
 - 1. Contractors must furnish their employees with the proper type of personal protective equipment as required by the operations being performed, including, but not necessarily limited to the following:
 - a. Hard Hats must be furnished to employees and worn at ALL times when on this project, whether or not an overhead hazard exists or what state the project may be in.
 - b. The Owner requires that appropriate attire be worn at all times while employees are working on-site. Appropriate attire shall be as deemed necessary by the Owner and in accordance with all applicable OSHA regulations.
- D. Safety Meetings
 - 1. The Contractor is required to conduct and all employees are required to attend a "Tool Box" type safety meeting once a week. The meetings may either be presided over by the Contractor's foreman or another competent representative designated by the Contractor.
- E. Fire Protection
 - 1. The Contractor must supply approved fire extinguishers for emergency use within his own immediate area of operation, including the Contractor's office, tool and storage enclosures.
- F. Treatment of Injuries
 - 1. The Contractor shall require that all employees injured (no matter how slight) while working on this project, report immediately for First Aid Treatment. The Contractor shall maintain adequate First Aid Facilities in the field.
- G. Cooperation
 - 1. Any deviation from this course of action will be called to the attention of the Contractor for immediate correction. Conversely, the Contractor should call attention to any unsafe conditions or unsafe practice by other Contractors at the site.
- H. Installed Safety Apparatus
 - 1. Each Contractor is responsible for the reinstallation of safety apparatus installed by other Contractors if removed to facilitate the installation of their own Contract Work.
- I. Weapons Policy
 - 1. All persons are prohibited from carrying, possessing or storing a handgun, firearm, or weapon of any kind while on the Project site, regardless of whether the person has registered the weapon or is licensed to carry a concealed weapon.
 - 2. Failure to abide by all terms and conditions of this policy may result in discipline up to and including termination. Further, carrying any weapon onto the Owner's property in violation of this policy will be considered an act of criminal trespass and possession of a weapon will be grounds for immediate removal of the person from the Project Site, and may result in prosecution.
- J. Radios
 - 1. The playing of radios will not be permitted on this Project site.

SECTION 01 4000 QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance.
- B. Quality Control Plan
- C. References and standards.
- D. Testing and inspection agencies and services.
- E. Control of installation.
- F. Mock-ups.
- G. Tolerances.
- H. Manufacturers' field services.
- I. Defect Assessment.

1.02 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.03 CONTRACTOR'S QUALITY CONTROL PLAN

- A. Quality Control Plan a written plan describing how the contractor will evaluate the work to confirm that it complies with the Contract Documents and authorities having jurisdiction. The Plan shall be submitted within 15 days following Notice to Proceed.
- B. Each Prime contractor shall employ a Quality Control Inspector whose primary responsibility is to verify that the work in place meets the contract document requirements through inspections, review of testing, and coordination with subcontractors, manufactures, and suppliers. The Inspector's duties shall include, but not be limited to:
 - 1. monitor quality control over suppliers, manufacturers, products, services site conditions, and workmanship, to produce Work of specified quality.
 - 2. ensure work complies with manufacturers' instructions, including each step in sequence.
 - 3. request clarification from the appropriate party's should manufacturers' instructions conflict with Contract Documents.
 - 4. comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
 - 5. ensure work is performed by persons qualified to produce workmanship of specified quality.
 - 6. secure products are in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
 - 7. ensure testing and inspection agencies are scheduled, proper tests and inspections are performed, and the work is in compliance with the requirements.
- C. Quality Control Reports the Quality Control Inspector shall prepare a weekly Quality Control Report that summarizes all work completed, it's compliance with the Contract Documents, and any deficiencies that exist. The report shall be prepared in digital format and submitted at the weekly project meeting.

1.04 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Contractor shall employ and pay for services of an independent testing agency to perform specified testing and inspection.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.
- C. Integrated Exterior Mock-ups: construct integrated exterior mock-up as indicated on Drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.
- D. Room Mock-ups: Construct room mock-ups as indicated on Drawings. Coordinate installation of materials, products, and assemblies as required in Specification Sections; finish according to

requirements. Provide required lighting and any supplemental lighting where required to enable Architect to evaluate quality of the mock-up.

- E. Notify Architect and Owner seven (7) working days in advance of dates and times when mockups will be constructed.
- F. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
- G. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- H. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- I. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
 - 1. Architect will issue written comments within five (5) working days of initial review and each subsequent follow up review of each mock-up.
 - 2. Make corrections as necessary until Architect's approval is issued.
- J. Accepted mock-ups shall be a comparison standard for the remaining Work.
- K. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.
- L. Where possible salvage and recycle the demolished mock-up materials.

3.03 TOLERANCES

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

3.04 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:

- a. To provide access to Work to be tested/inspected.
- b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
- c. To facilitate tests/inspections.
- d. To provide storage and curing of test samples.
- 4. Notify Architect and laboratory 48 hours prior to expected time for operations requiring testing/inspection services.
- 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct an appropriate remedy or adjust payment.

SECTION 01 4216 DEFINITIONS

PART 1 GENERAL

1.01 SUMMARY

- A. This section supplements the definitions contained in the General Conditions.
- B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

- A. Furnish: To supply, deliver, unload, and inspect for damage.
- B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.
- C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products must be new, never before used.
- D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.
- E. Provide: To furnish and install.
- F. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

SECTION 01 5000 TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Division of Responsibilities
- C. Temporary telecommunications services.
- D. Temporary sanitary facilities.
- E. Temporary Controls: Barriers, enclosures, and fencing.
- F. Security requirements.
- G. Waste removal facilities and services.
- H. Field offices.
- I. Stairs
- J. Fire Protection
- K. Operation and Maintenance
- L. Removal of Temporary Facilities.

1.02 DIVISION OF RESPONSIBILITIES

- A. General: These Specifications assign each Prime Contractor specific responsibilities for certain temporary facilities used by other Prime Contractors and other entities at the site. The Contractor for General Construction is responsible for providing temporary facilities and controls that are not normal construction activities of other Prime Contractors and are not specifically assigned otherwise.
- B. Each Prime Contractor is responsible for the following:
 - 1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, as well as the costs and use charges associated with each facility.
 - 2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
 - 3. Multi-phase power service or power requirements in excess of 120-V, single phase, temporary power. Electric service for welding.
 - 4. Its own field office.
 - 5. Its own storage and fabrication sheds or trailers.
 - 6. Temporary heat, ventilation, humidity control, and enclosure of the building where these facilities are necessary for its construction activity but have not yet been installed by the responsible Prime Contractor. Refer to Section 01 5100 Temporary Utilities.
 - 7. All hoisting requirements.
 - 8. Collection and disposal of its own hazardous, dangerous, unsanitary, or other harmful waste material.
 - 9. Secure lockup of its own tools, materials, and equipment.
 - 10. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
 - 11. Containerized bottled-water drinking-water units.
 - 12. Dewatering, including ice and snow removal, for areas specific to their own work.
 - 13. Continuous removal and disposal of general construction waste and debris generated by construction activities.
 - 14. Temporary safety facilities.
 - 15. Temporary telephone service for construction activities
- C. The General Contractor is responsible for the following:

- 1. Dewatering, including ice and snow removal, of the building pad and in areas of foundation excavation and for all general construction activities.
- 2. Temporary roads and paving required to complete General Construction activities.
- 3. Temporary construction identification signs and temporary site directional signage.
- 4. Interior and Exterior enclosures.
- 5. Barricades, warning signs, and lights for General Construction activities.
- 6. Enclosure fence as required by General Construction activities.
- 7. Environmental protection for General Construction activities.
- 8. Temporary enclosure of the building.
- 9. Security enclosure and lockup.
- 10. Temporary stairway construction.
- 11. Temporary fire protection
- 12. Temporary toilets, including disposable supplies.
- 13. Temporary wash facilities, including disposable supplies.

1.03 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power and metering, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.
- B. Existing facilities may be used.

1.04 TELECOMMUNICATIONS SERVICES

- A. Provide and maintain cellular communications for all prime and subcontractors working at the project site.
- B. Each prime contractor's representative shall maintain a list of all subcontractors contact information and shall be able to contact them at all times while working at the project site.
- C. Provide and maintain a current list of contacts to the owner, prime contractor's, and engineer.

1.05 TEMPORARY SANITARY FACILITIES

- A. Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
 - 1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
- B. Maintain daily in clean and sanitary condition.

1.06 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-ofway and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
- D. Traffic Controls: as required by the authority having jurisdiction.

1.07 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.08 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and

maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.09 INTERIOR ENCLOSURES

- A. Provide temporary partitions and ceilings as indicated to separate work areas from Owneroccupied areas and/or work areas, to prevent penetration of dust and moisture into Owneroccupied areas or work area, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces.
- C. Provide insulated weather tight enclosures closures where required.

1.10 SECURITY

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

1.11 VEHICULAR ACCESS AND PARKING - SEE SECTION 01 5500

1.12 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site daily.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- E. The General Contractor shall provide a dumpster on site for miscellaneous daily trash. Make special provisions for handling hazardous waste in compliance with all local, state, and federal regulations.
- F. Each Prime Contractor shall be responsible for proper collection, storage and disposal of their own waste materials resulting from demolition packaging and crating.
- G. Each Prime Contractor shall clean site of all construction debris at the end of each work day. The debris shall be placed in a dumpster and removed from the site as soon as the dumpster is full. Debris shall be disposed of in accordance with all Local, State & federal regulations.

1.13 FIELD OFFICES

- A. General Contractor shall provide space within the building for the weekly project meeting, contractor coordination meetings, owner and engineer meetings, and safety meetings.
- B. The area shall be Weathertight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture.
- C. Provide space for Project meetings, with table and chairs to accommodate 10 persons.

1.14 STAIRS

A. Until permanent stairs are available provide temporary stairs where ladders are not adequate. Cover finished permanent stairs with a protective covering of plywood or similar material so finishes will be undamaged at the time of acceptance.

1.15 FIRE PROTECTION

- A. General: Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.
- B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10, "Standard for

Portable Fire Extinguishers," and NFPA 241, "Standard for Safeguarding Construction, Alterations, and Demolition Operations."

- 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
- 2. Store combustible materials in containers in fire-safe locations.
- 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire- protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
- 4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

1.16 OPERATION AND MAINTENANCE

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities and good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations

1.17 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Each Prime Contractor shall provide new materials. If acceptable to the Owner or Architect, undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Lumber and Plywood: Comply with the requirements of Division 6 Section "Rough Carpentry."
- C. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- D. Water: Provide potable water approved by local health authorities.

2.02 EQUIPMENT

- A. General: Each Prime Contractor shall provide new equipment. If acceptable to the Owner or Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4-inch heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

- C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher voltage outlets. Provide 120-V, single phase, ground-fault outlets at 50' on center in corridor areas and spaces larger than 800 square feet. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. At a minimum, install weather-proof sockets complete with 100 watt lamps at 20' on center in all corridor areas, circulation areas and all spaces over 400 square feet. Provide guard cages or tempered-glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- H. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, ULrated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPArecommended classes for the exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
- I. First Aid Supplies: Comply with regulations of authorities having jurisdiction.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Each Prime Contractor shall provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

SECTION 01 5500 VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Access roads.
- B. Parking.
- C. Existing pavements and parking areas.
- D. Permanent pavements and parking facilities.
- E. Construction parking controls.
- F. Flag persons.
- G. Flares and lights.
- H. Haul routes.
- I. Traffic signs and signals.
- J. Maintenance.
- K. Removal, repair.
- L. Mud from site vehicles.

PART 2 PRODUCTS

2.01 SIGNS, SIGNALS, AND DEVICES

- A. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
- B. Flag Person Equipment: As required by local jurisdictions.

PART 3 EXECUTION

3.01 PREPARATION

A. Clear areas, provide surface and storm drainage of road, parking, area premises, and adjacent areas.

3.02 ACCESS ROADS

- A. Use of existing on-site streets and driveways for construction traffic is not permitted without the approval of the authority having jurisdiction.
- B. Tracked vehicles not allowed on paved areas.
- C. Provide unimpeded access for emergency vehicles. Maintain 12 foot width driveways with turning space between and around combustible materials.
- D. Provide and maintain access to fire hydrants free of obstructions.

3.03 PARKING

- A. Use of existing parking facilities by construction personnel is not permitted.
- B. Use of new parking facilities by construction personnel is not permitted.
- C. Arrange for temporary parking areas to accommodate use of construction personnel.

3.04 PERMANENT PAVEMENTS AND PARKING FACILITIES

- A. The base for permanent roads and parking areas may be used for construction traffic.
- B. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.

3.05 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.

C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.06 FLAG PERSONS

A. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

3.07 FLARES AND LIGHTS

A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.08 HAUL ROUTES

- A. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

3.09 TRAFFIC SIGNS AND SIGNALS

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
- C. Relocate as Work progresses, to maintain effective traffic control.

3.10 MAINTENANCE

- A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, Products, mud, snow, and ice.
- B. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.11 REMOVAL, REPAIR

- A. Remove temporary roads when permanent paving is usable.
- B. Repair existing facilities damaged by use, to new condition.
- C. Repair damage caused by installation.

3.12 MUD FROM SITE VEHICLES

A. Provide means of removing mud from vehicle wheels before entering streets.

3.13 DELIVERY OF EQUIPMENT AND MATERIALS

- A. Contractor must coordinate and arrange for the delivery and staging of materials and equipment to the project site.
- B. Equipment and materials may not be stored in the streets, alleys, or adjacent properties without approval of the authority having jurisdiction.

SECTION 01 5713

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Compensation of Owner for fines levied by authorities having jurisdiction due to noncompliance by Contractor.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.

1.03 REFERENCE STANDARDS

A. Pennsylvania Department of Environmental Protection, Erosion and Sediment Pollution Control Program Manual.

1.04 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of the Pennsylvaina Department of Environmental Protection's Erosion and Sedimentation Control Manual.
- B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Owner will obtain permits and pay for securities required by authority having jurisdiction.
 - 2. Owner will withhold payment to Contractor equivalent to all fines resulting from noncompliance with applicable regulations.
- C. Timing: Put preventive measures in place prior to disturbance of surface cover and before precipitation occurs.
- D. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 10 years.
- E. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- F. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

- G. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- H. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- I. Open Water: Prevent standing water that could become stagnant.
- J. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Refer to the Erosion and Sediment Control drawings.
- B. Erosion Control Blanket: North American Green SC 150BN double net straw blanket or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 INSTALLATION - REFER TO THE EROSION AND SEDIMENT CONTROL DRAWINGS.

3.04 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

SECTION 01 6000 PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Re-use of existing products.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations and procedures.
- E. Procedures for Owner-supplied products.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. DO NOT USE products having any of the following characteristics:
 - 1. Containing lead, cadmium, asbestos.
- C. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 2. Have longer documented life span under normal use.
 - 3. Result in less construction waste.

2.03 STANDARD OF QUALITY

- A. The various materials and products specified in the specifications by name or description are given to establish a standard of quality and cost for bid purposes. It is not the intent to limit the bidder, the bid, or the evaluation of the bid to any one material or product specified but rather to describe the minimum standard. When proprietary names are used, they shall be followed by the words "or alternatives of the quality necessary to meet the specifications". A bid containing an alternative which does not meet the specifications may be declared non-responsive. A bid containing an alternative may be accepted but, if an award is made to that bidder, the bidder will be required to replace any alternatives which do not meet the specifications.
- B. No approval prior to bidding and no listing on Proposal Forms will be required. It will, however, be the responsibility of the Contractor to obtain the Owner/engineer's approval for any product or material not named by submitting adequate data for proper evaluation after contract award and prior to confirmation of order for any such item.
- C. Contractor will be responsible for all changes required for installation of any approved equal or accepted substituted item at no additional cost to the Owner.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

- A. Substitutions will only be considered after contract award.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- C. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- E. Substitution Submittal Procedure (after contract award):
 - 1. Submit substitution requests by completing the form in Section 01 3300 Submittals, see this section for additional information and instructions.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. Architect will notify Contractor in writing of decision to accept or reject request.

3.02 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
 - 2. Arrange and pay for product delivery to site.
 - 3. On delivery, inspect products jointly with Contractor.
 - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
 - 1. Review Owner reviewed shop drawings, product data, and samples.
 - 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 - 3. Handle, store, install and finish products.
 - 4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- H. Comply with manufacturer's warranty conditions, if any.
- I. Do not store products directly on the ground.
- J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- K. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- L. Prevent contact with material that may cause corrosion, discoloration, or staining.
- M. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- N. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

SECTION 01 7000

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Demonstration and instruction of Owner personnel.
- I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- J. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 3000 Administrative Requirements: Submittals procedures.
- C. Section 01 4000 Quality Requirements: Testing and inspection procedures.
- D. Section 01 5000 Temporary Facilities and Controls: Temporary exterior enclosures.
- E. Section 01 5000 Temporary Facilities and Controls: Temporary interior partitions.
- F. Section 01 5100 Temporary Utilities: Temporary heating, cooling, and ventilating facilities.
- G. Section 01 5713 Temporary Erosion and Sediment Control: Additional erosion and sedimentation control requirements.
- H. Section 01 7800 Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

A. For demolition work, employ a firm specializing in the type of work required.

- B. For survey work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.
- C. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.05 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
- H. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

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

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with one copies to Architect, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Control datum for survey is that indicated on Drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- H. Utilize recognized engineering survey practices.
- I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
- J. Periodically verify layouts by same means.
- K. Maintain a complete and accurate log of control and survey work as it progresses.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 - 2. Remove items indicated on drawings.
 - 3. Relocate items indicated on drawings.
 - 4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
- 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
- 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. See Section 01 1000 for other limitations on outages and required notifications.
 - c. Provide temporary connections as required to maintain existing systems in service.
- 4. Verify that abandoned services serve only abandoned facilities.
- 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 - 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
 - 2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 - 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
 - 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 - 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.

- 6. Repair new work damaged by subsequent work.
- 7. Remove samples of installed work for testing when requested.
- 8. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to specified condition.
- E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- J. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

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

3.11 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.
- E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.12 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.13 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.14 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Architect and Owner.

- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.15 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 7800 CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Section 01 7000 Execution and Closeout Requirements: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all documents as required prior to final submission.
- B. Operation and Maintenance Data:
 - 1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 3. Submit two sets of revised final documents in final form within 10 days after final inspection.
 - 4. In addition to the hard copy binders, submit a digital (PDF) format copy.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
 - 4. In addition to the hard copy binders, submit a digital (PDF) format copy.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.

- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. All filed markups shall be converted to PDF format using professional software capable of producing legible and detailed notations. A scanned version of the hand drawings is not acceptable.
 - 6. Details not on original Contract drawings.
- G. Final Record Document Set: Submit Final PDF markups both in digital format and two copies of the full size drawing sets.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. 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.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

- C. 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.
- D. 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.
- E. Provide servicing and lubrication schedule, and list of lubricants required.
- F. Include manufacturer's printed operation and maintenance instructions.
- G. Include sequence of operation by controls manufacturer.
- H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- I. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- J. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- K. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- L. Include test and balancing reports.
- M. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Photocopies of warranties and bonds.

4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

SECTION 02 4100 DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selective demolition of built site elements.
- B. Selective demolition of interior building elements for alteration purposes.

1.2 RELATED REQUIREMENTS

- A. Section 01 5000 Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- B. Section 01 7000 Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.3 REFERENCE STANDARDS

- A. 29 CFR 1926 U.S. Occupational Safety and Health Standards; current edition.
- NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.
- 1.4 SUBMITTALS
 - A. See Section 01 3000 Administrative Requirements, for submittal procedures.
 - B. Site Plan: Showing:
 - 1. Areas for temporary construction and field offices.

PART 2 EXECUTION

- 2.1 SCOPE
 - A. Remove pavements and curbs, including subbase, as required to accomplish new work.
 - B. Remove other items indicated, for salvage or relocation, and recycling.
- 2.2 GENERAL PROCEDURES AND PROJECT CONDITIONS
 - A. Comply with other requirements specified in Section 01 7000.
 - B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Provide, erect, and maintain temporary barriers and security devices.
 - 2. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 3. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 4. Do not close or obstruct roadways or sidewalks without permit.
 - 5. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 - 6. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
 - C. Do not begin removal until receipt of notification to proceed from Owner.
 - D. Do not begin removal until built elements to be salvaged or relocated have been removed.
 - E. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.

- F. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- G. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- H. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.
- 2.3 EXISTING UTILITIES
 - A. Protect existing utilities to remain from damage.
 - B. Do not disrupt public utilities without permit from authority having jurisdiction.
 - C. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7days prior written notification to Owner.
 - D. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- 2.4 SELECTIVE DEMOLITION FOR ALTERATIONS
 - A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
 - B. Separate areas in which demolition is being conducted from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
 - C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 - 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - 3. Verify that abandoned services serve only abandoned facilities before removal.
 - 4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
 - E. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
 - 4. Patch as specified for patching new work.

2.5 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 4100

SECTION 03 3000 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete formwork.
- C. Slabs on grade.
- D. Concrete reinforcement.
- E. Joint devices associated with concrete work.
- F. Concrete curing.
- 1.2 RELATED REQUIREMENTS
 - A. Section 07 9200 Joint Sealants: Products and installation for sealants for saw cut joints and isolation joints in slabs.
- 1.3 REFERENCE STANDARDS
 - ACI 117 Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
 - B. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
 - C. ACI 301 Specifications for Structural Concrete; 2010 (Errata 2012).
 - D. ACI 302.1R Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
 - E. ACI 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
 - F. ACI 305R Hot Weather Concreting; 2010.
 - G. ACI 306R Cold Weather Concreting; 2010.
 - H. ACI 308R Guide to Curing Concrete; 2001 (Reapproved 2008).
 - I. ACI 318 Building Code Requirements for Structural Concrete and Commentary; 2011.
 - J. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
 - K. ASTM A775/A775M Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2007b (Reapproved 2014).
 - L. ASTM A1064/A1064M Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.
 - M. ASTM C33/C33M Standard Specification for Concrete Aggregates; 2013.
 - N. ASTM C39/C39M Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.
 - O. ASTM C143/C143M Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
 - P. ASTM C150/C150M Standard Specification for Portland Cement; 2015.
 - Q. ASTM C173/C173M Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2014.
 - R. ASTM C260/C260M Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
 - S. ASTM C494/C494M Standard Specification for Chemical Admixtures for Concrete; 2013.

- T. ASTM C881/C881M Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2014.
- U. ASTM C1059/C1059M Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- V. COE CRD-C 48 Method of Test for Water Permeability of Concrete; 1992.

1.4 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 Concrete Quality, Mixing and Placing.
- D. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

1.6 WARRANTY

- A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- B. Slabs with Moisture Vapor Reducing Admixture (MVRA): Provide warranty to cover the cost of flooring failures due to moisture migration from slabs for ten years.
 - 1. Include cost of repair or removal of failed flooring, placement of topical moisture remediation system, and replacement of flooring with comparable flooring system.
 - 2. Provide warranty by manufacturer of MVRA matching terms of flooring adhesive or primer manufacturer's material defect warranty.

PART 2 PRODUCTS

2.1 FORMWORK

- A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.2 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
- B. Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.

2.3 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I Normal Portland type.
 - 1. Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C 33.
 - 1. Acquire all aggregates for entire project from same source.
- C. Fly Ash: ASTM C618, Class F.
- D. Water: Clean and not detrimental to concrete.
- E. Exterior Concrete Supplier the owner does not accept Stone & Company as a supplier for exterior concrete applications.

2.4 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. Accelerating Admixture: ASTM C494/C494M Type C.
 - 1. Manufacturers:
 - a. W.R. Meadows, Inc; Hydraset: www.wrmeadows.com.
 - b. Substitutions: See Section 01 6000 Product Requirements.
- D. Waterproofing Admixture: Admixture formulated to reduce permeability to liquid water, with no adverse effect on concrete properties.
 - 1. Admixture Composition: Hydrophobic polymer waterproofing and corrosion inhibitor, functioning by closing concrete pores and chemical bonding.
 - 2. Permeability of Cured Concrete: No measurable leakage when tested in accordance with COE CRD-C 48 at 350 feet of head; provide test reports.
 - 3. Potable Water Contact Approval: NSF certification for use on structures holding potable water, based on testing in accordance with NSF 61 and NSF 372.

2.5 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
- B. Epoxy Bonding System:
 - 1. Complying with ASTM C881/C881M and of Type required for specific application.
- C. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
 - 1. Material: ASTM D1752 sponge rubber (Type I).

D. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with minimum 1 inch diameter holes for conduit or rebars to pass through at 6 inches on center; ribbed steel stakes for setting.

2.6 CURING MATERIALS

- A. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
 - 1. Application: Use at all slabs.
 - 2. Vehicle: Solvent-based.
 - 3. Manufacturers:
 - a. Kaufman Products Inc.; Krystal 25: www.kaufmanproducts.net.
 - b. W.R. Meadows, Inc.; CS-309 OTC: www.wrmeadows.com.
 - c. Substitutions: See Section 01 6000 Product Requirements.

2.7 CONCRETE MIX DESIGN

- A. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- B. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,500 pounds per square inch.
 - 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 - 3. Cement Content: Minimum 600 lb per cubic yard.
 - 6. Water-Cement Ratio: Maximum 40 percent by weight.
 - 7. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
 - 8. Maximum Slump: 3 inches.
 - 9. Maximum Aggregate Size: 5/8 inch.

PART 3 EXECUTION

- 3.1 EXAMINATION
 - A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.2 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
 - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 - 2. Use latex bonding agent only for non-load-bearing applications.
- D. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.3 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.4 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- D. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.5 SLAB JOINTING

- A. Locate joints as indicated on the drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D. Load Transfer Construction and Contraction Joints: Install load transfer devices as indicated; saw cut joint at surface as indicated for contraction joints.
- E. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
- F. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

3.6 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. Maximum Variation of Surface Flatness:
 - 1. Exposed Concrete Floors: 1/4 inch in 10 feet.
 - 2. Under Seamless Resilient Flooring: 1/4 inch in 10 feet.
 - 3. Under Carpeting: 1/4 inch in 10 feet.
- B. Correct the slab surface if tolerances are less than specified.
- C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.7 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
- 3.8 CURING AND PROTECTION
 - A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces Not in Contact with Forms:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - 2. Final Curing: Begin after initial curing but before surface is dry.
- 3.9 FIELD QUALITY CONTROL
 - A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
 - B. Provide free access to concrete operations at project site and cooperate with appointed firm.
 - C. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
 - D. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
 - E. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
- 3.10 DEFECTIVE CONCRETE
 - A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
 - B. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
 - C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

END OF SECTION 03 3000

SECTION 03 3536 STAMPED CONCRETE OVERLAY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stamped concrete overlay.

1.02 RELATED REQUIREMENTS

A. Section 03300 (03 30 00) - Cast-in-Place Concrete.

1.03 SUBMITTALS

- A. Comply with Section 01 3300 Submittals.
- B. Product Data: Submit manufacturer's product data, including surface preparation and application instructions.
- C. Samples: Submit manufacturer's samples of colors, model numbers, and patterns.
- D. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- E. Applicator's Project References: Submit applicator's list of successfully completed stamped concrete overlay projects, including project name and location, name of architect, and type and quantity of materials applied.

1.04 QUALITY ASSURANCE

- A. Applicator's Qualifications:
 - 1. Applicator regularly engaged, for preceding 5 years, in application of stamped concrete overlay of similar type to that specified.
 - 2. Employ persons trained for application of stamped concrete overlay.
- B. Mock-ups:
 - 1. Construct Mock-ups of Stamped Concrete Overlay:
 - a. Use same materials and methods for use in the Work.
 - b. Location: Determined by Architect.
 - c. Minimum Size: 4 feet by 4 feet.
 - 2. Receive approval of mock-ups by Architect for patterns, colors, textures, finishing, sealing, special effects, and workmanship before application of stamped concrete overlay.
 - 3. Approved Mock-ups:
 - a. Standard for patterns, colors, textures, finishing, sealing, special effects, and workmanship of stamped concrete overlay.
 - b. Retain through completion of Work for use as quality standard.
- C. Pre-application Meeting:
 - 1. Convene pre-application meeting before start of application of stamped concrete overlay.
 - 2. Require attendance of parties directly affecting work of this section, including:
 - a. Contractor.
 - b. Architect.
 - c. Applicator.
 - d. Manufacturer's representative.
 - 3. Review:
 - a. Mock-ups.
 - b. Materials.
 - c. Preparation.
 - d. Application.
 - e. Finishing.
 - f. Sealing.
 - g. Protection.
 - h. Coordination with other work.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials in accordance with manufacturer's instructions.
 - 2. Keep materials in manufacturer's original, unopened containers and packaging until application.
 - 3. Store materials in clean, dry area indoors.
 - 4. Store materials out of direct sunlight.
 - 5. Keep materials from freezing.
 - 6. Protect materials during storage, handling, and application to prevent contamination or damage.

1.06 AMBIENT CONDITIONS

- A. Apply materials when air and surface temperatures are between 55 degrees F (13 degrees C) and 80 degrees F (27 degrees C).
- B. Do not apply materials when rain, snow, or excessive moisture is expected during application or within 24 hours after application.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Brickform, 11061 Jersey Boulevard, Rancho Cucamonga, California 91730. Toll Free 800-483-9628. Phone 909-484-3399. Fax 909-484-3318. Website <u>www.brickform.com</u>. E-mail info@brickform.com.

2.02 MATERIALS

- A. Concrete Overlay: Brickform "Stampable Overlay".
- B. Reactive Primer: Brickform "777 Bond Coat".
- C. Overlay Liquid Colorant: Brickform "Overlay Liquid Colorant".
 1. Colors: As selected by owner from manufactures full range of colors.
- D. Colorless Bond Breaker: Brickform "Liquid Release".
- E. Stamping Mats: Brickform "Overlay Texture Mats".
 - 1. Model Number: As selected by owner from manufactures full line.
 - 2. Pattern: As selected by owner from manufactures full line.
- F. Sealer: 1. Sa
 - Satin-Finish Sealer: Brickform "Satin-Seal".
 - a. Natural-look, water-based, acrylic, clear sealer.
 - b. VOC: 100 g/L.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine existing concrete surfaces to receive stamped concrete overlay.
- B. Notify Architect of conditions that would adversely affect application or subsequent use.
- C. Do not begin preparation or application until unacceptable conditions are corrected.

3.02 PREPARATION

- A. Protection of In-Place Conditions: Protect adjacent surfaces, areas, adjoining walls, and landscaping from contact with stamped concrete overlay materials.
- B. Surface Preparation of Existing Concrete:
 - 1. Prepare existing concrete in accordance with manufacturer's instructions.
 - 2. Profile concrete to surface profile in accordance with manufacturer's instructions.

- 3. Ensure existing concrete is clean, sound, dry, and fully cured.
- 4. Remove dirt, dust, debris, oil, grease, sealers, paint, coatings, and other contaminates that could reduce bond with overlay.
- 5. Repair damaged and deteriorated concrete.
- 6. Fill cracks, holes, spalls, and low areas.
- 7. Prepare joints in accordance with manufacturer's instructions.

3.03 APPLICATION

- A. Apply stamped concrete overlay materials in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Apply reactive primer to prepared concrete surface in accordance with manufacturer's instructions.
- C. Mixing: Mix concrete overlay material with water and overlay liquid colorant in accordance with manufacturer's instructions.
- D. Overlay Thickness: Apply concrete overlay over reactive primer to uniform thickness between 1/4 inch and 3/8 inch.
- E. Colorless Bond Breaker:
 - 1. Apply colorless bond breaker in accordance with manufacturer's instructions to bottom of stamping mats and on concrete overlay surface, when concrete overlay has reached plastic stage desirable for imprinting.
 - 2. Do not trowel or mix colorless bond breaker into plastic concrete overlay surface.
- F. Stamping Mats:
 - 1. Press stamping mats in accordance with manufacturer's instructions into concrete overlay that has reached plastic stage desirable for imprinting.
 - 2. Use stamping mats to create patterns in concrete overlay as indicated on the Drawings.
- G. Approved Mock-ups: Match approved mock-ups for patterns, colors, textures, finishing, sealing, special effects, and workmanship.

3.04 SEALING

- A. Seal concrete overlay surfaces in accordance with manufacturer's instructions.
- B. Apply sealer to clean and dry concrete overlay surfaces in accordance with manufacturer's instructions after concrete overlay has cured 24 to 48 hours.
- C. Apply sealer uniformly over entire stamped concrete overlay surface.
- D. Do not allow traffic on finished sealed surfaces for the following periods after application:
 - 1. Foot Traffic: Minimum 36 hours.
 - 2. Vehicular Traffic: Minimum 5 days.

3.05 PROTECTION

A. Exterior Surfaces: Protect applied stamped concrete overlay to ensure that, except for normal weathering, concrete overlay will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 03 5400 CAST UNDERLAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Liquid-applied self-leveling floor underlayment.
 - 1. Use cementitious type.

1.2 REFERENCE STANDARDS

- A. ASTM C109/C109M Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- B. ASTM C348 Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2014.
- C. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

1.3 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, environmental limitations, and installation instructions.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer.
- 1.5 DELIVERY, STORAGE, AND HANDLING
 - A. Store products in manufacturer's unopened packaging until ready for installation.
 - B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.6 MOCK-UP

- A. Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Prepare mock-up in location designated by Architect.
 - 2. Area: 6 ft by 6 ft.
- B. Mock-up may remain as part of the Work.
- 1.7 FIELD CONDITIONS
 - A. Do not install underlayment until floor penetrations and peripheral work are complete.
 - B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.
 - C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Cementitious Underlayment:
 - 1. ARDEX Engineered Cements; FEATHER FINISH with ARDEX MC ULTRA: www.ardexamericas.com.

2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 MATERIALS

- A. Cast Underlayments, General:
- B. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
 - 1. Compressive Strength: Minimum 4000 psi after 28 days, tested per ASTM C109/C109M.
 - 2. Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C348.
 - 3. Density: 125 lb/cu ft, nominal.
 - 4. Final Set Time: 1-1/2 to 2 hours, maximum.
 - 5. Thickness: Capable of thicknesses from feather edge to maximum 3-1/2 inch.
 - 6. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.
- C. Water: Potable and not detrimental to underlayment mix materials.
- D. Primer: Manufacturer's recommended type.
- E. Joint and Crack Filler: Latex based filler, as recommended by manufacturer.

2.3 MIXING

- A. Site mix materials in accordance with manufacturer's instructions.
- B. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

- 3.1 EXAMINATION
 - A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.
- 3.2 PREPARATION
 - A. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
 - B. Vacuum clean surfaces.
 - C. Prime substrate in accordance with manufacturer's instructions. Allow to dry.
 - D. Close floor openings.
- 3.3 APPLICATION
 - A. Install underlayment in accordance with manufacturer's instructions.
 - B. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.
 - C. For final thickness over 1-1/2 inches, place underlayment in layers. Allow initial layer to harden to the point where the material has lost its evaporative moisture. Immediately prime and begin application of the subsequent layer within 24 hours.
 - D. Place before partition installation.
 - E. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.
 - F. If a fine, feathered edge is desired, steel trowel the edge after initial set, but before it is completely hard.

3.4 CURING

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.

3.5 PROTECTION

- A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.
- B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION 03 5400

SECTION 04 0100 MAINTENANCE OF MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water and Chemical cleaning of brick masonry surfaces.

1.02 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; 2011.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work of this section.1. Require attendance of parties directly affecting work of this section.
- B. Scheduling:
 - 1. Perform cleaning and washing of masonry between the hours of 9am and 5pm or as directed by owner and architect only.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on cleaning compounds.
- C. Manufacturer's Instructions: For cleaning materials, indicate special procedures, conditions requiring special attention.

1.05 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
- B. Restorer: Company specializing in masonry restoration with minimum three years of documented experience.
- 1.06 MOCK-UP
 - A. Clean a 10 ft by 10 ft panel of wall to determine extent of cleaning.
 - 1. Repeat, using different cleaning methods for up to three different panels.
 - B. Acceptable panel and procedures employed will become the standard for work of this section.
 - C. Mock-up may remain as part of the Work.

1.07 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Restoration and Cleaning Chemicals:
 - 1. Diedrich Technologies, Inc: www.diedrichtechnologies.com.
 - 2. HMK Stone Care System: www.hmkstonecare.com.
 - 3. PROSOCO: www.prosoco.com.
 - 4. Substitutions: See Section 01 6000 Product Requirements.

2.02 CLEANING MATERIALS

- A. Cleaning Agent: Detergent type.
- B. Acid Solution: Clean, stain free, commercial hydrochloric (muriatic) acid, mixed one part to 10 parts of potable water.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protect surrounding elements from damage due to restoration procedures.
- B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.
- C. Separate areas to be protected from restoration areas using means adequate to prevent damage.
- D. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.
- E. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.
- F. Do not allow cleaning runoff to drain into sanitary or storm sewers.
- 3.02 CLEANING EXISTING MASONRY
 - A. Cleaning Detergent: Brush clean masonry surfaces at all locations with approved type cleaning agent in accordance with the manufacturer's instructions. Saturate masonry with clean water and flush loose mortar and dirt.

END OF SECTION 04 0100

SECTION 06 1000 ROUGH CARPENTRY

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Structural dimension lumber framing.
 - B. Non-structural dimension lumber framing.
 - C. Rough opening framing for doors, windows, and roof openings.
 - D. Sheathing.
 - E. Preservative treated wood materials.
 - F. Concealed wood blocking, nailers, and supports.
- 1.2 REFERENCE STANDARDS
 - A. ANSI A208.1 American National Standard for Particleboard; 2009.
 - B. AWC (WFCM) Wood Frame Construction Manual for One- and Two-Family Dwellings; 2015.
 - C. AWPA U1 Use Category System: User Specification for Treated Wood; 2012.
 - D. PS 2 Performance Standard for Wood-Based Structural-Use Panels; 2010.
 - E. PS 20 American Softwood Lumber Standard; 2010.

1.3 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.
- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- 1.5 WARRANTY
 - A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

- B. Lumber fabricated from old growth timber is not permitted.
- 2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS
 - A. Sizes: Nominal sizes as indicated on drawings, S4S.
 - B. Moisture Content: S-dry or MC19.
 - C. Stud Framing (2 by 2 through 2 by 6):
 - 1. Grade: No. 2.
 - D. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
 - E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or better.
 - 2. Boards: Standard or No. 3.

2.3 STRUCTURAL COMPOSITE LUMBER

- A. At Contractor's option, structural composite lumber may be substituted for concealed dimension lumber and timbers.
- B. Structural Composite Lumber: Factory fabricated beams, headers, and columns, of sizes and types indicated on drawings; structural capacity as published by manufacturer.
 - 1. Manufacturers:
 - a. Weyerhaeuser: www.weyerhaeuser.com.
 - b. Boise Cascade; www.bc.com.

2.4 CONSTRUCTION PANELS

- A. Roof Sheathing: APA rated Sheathing.
 - 1. Bond Classification: Exposure 1.
 - 2. Span Rating: 48.

2.5 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Preservative Treatment:
 - 1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber in contact with masonry or concrete.

PART 3 EXECUTION

- 3.1 PREPARATION
 - A. Coordinate installation of rough carpentry members specified in other sections.
- 3.2 INSTALLATION GENERAL
 - A. Select material sizes to minimize waste.

- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWI (WFCM) Wood Frame Construction Manual.
- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G. Provide bridging at joists in excess of 8 feet span as detailed. Fit solid blocking at ends of members.
- H. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.4 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.5 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.6 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

END OF SECTION 06 1000

SECTION 06 2000 FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

- 1.02 RELATED REQUIREMENTS
 - A. Section 06 1000 Rough Carpentry: Support framing, grounds, and concealed blocking.
 - B. Section 09 9123 Interior Painting: Painting and finishing of finish carpentry items.
 - C. Section 12 3530 Residential Casework: Shop fabricated cabinet work.

1.03 REFERENCE STANDARDS

- A. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- B. AWI/AWMAC/WI (AWS) Architectural Woodwork Standards; 2014.
- 1.04 SUBMITTALS
 - A. See Section 01 3000 Administrative Requirements for submittal procedures.
 - B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot.
 - 2. Provide the information required by AWI/AWMAC/WI (AWS).
 - C. Samples: Submit two samples of wood trim 12 inches long.
- 1.05 QUALITY ASSURANCE
 - A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
- 1.06 DELIVERY, STORAGE, AND HANDLING
 - A. Protect work from moisture damage.
- PART 2 PRODUCTS
- 2.01 FINISH CARPENTRY ITEMS
 - A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI (AWS) for Custom Grade.
 - B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
 - C. Interior Woodwork Items:
 - 1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for finish as indicated in finish schedule
 - 3. Loose Shelving: Birch plywood; prepare for paint finish.
 - D. Exterior trim Items: Cellular PVC Trim
 - 1. Provide exterior trim in profiles indicated on the drawings.
 - 2. Manufacturers:
 - a. Versatex,
 - b. Azek,

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes.
 Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

3.02 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES

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

END OF SECTION 06 2000

SECTION 07 1200 FLUID-APPLIED, TRAFFIC-BEARING, ELASTOMERIC AND WATERPROOFING MEMBRANE

<u> PART 1 - GENERAL</u>

1.1 <u>SUMMARY</u>

- 1. Furnish all materials, labor, tools, equipment and services necessary for the preparation of the substrate and the application of a fluid-applied, traffic-bearing, elastomeric and waterproofing membrane as indicated by the drawings and specifications.
- 2. This section specifies components of a concrete repair and protection system that shall preferably be provided by a single manufacturer.

1.2 <u>SUBMITTALS</u>

- Submit all proposed material substitutions ten days prior to the bid opening date. Include written verification that the proposed substitute meets or exceeds all the performance criteria specified in this section. If the proposed substitute does not meet or exceed all the performance criteria specified in this section, submit the respective performance criteria of the proposed substitute, project references demonstrating a proven record of performance, compatibility documentation with entire concrete repair and protection system, and the cost savings to the owner.
- 2. Submit warranty upon acceptance of work.
- 3. All materials shall be provided by one single manufacturer.

1.3 <u>QUALITY ASSURANCE</u>

- 1. The contractor shall be experienced in concrete repair and protection. This shall be demonstrated by providing five successful concrete repair and protection project references.
- 2. The manufacturer shall be experienced in concrete repair and protection. This shall be demonstrated by providing proof of producing concrete repair and protection products for a minimum of ten years. Manufacturers that do not comply with the ISO 9000 quality standard in the development, manufacturing, and sale of their products may not be acceptable.
- 3. The contractor shall schedule a site meeting with a representative of the product prior to commencement of work.
- 4. Deliver products in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Store and condition the product in full compliance with the manufacturer's recommendations.
- 5. The contractor shall supply a warranty for workmanship for two years from date of project completion. The manufacturer shall provide a warranty for materials for 5 years from date of completion of project.

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PART 2 - PRODUCTS

2.1 <u>FLUID-APPLIED, TRAFFIC-BEARING, ELASTOMERIC AND WATERPROOFING</u> <u>MEMBRANE</u>

- 1. The specified product has been selected to establish a minimum standard of quality that will be accepted. The listing of the product is not intended to limit competition, but to establish the standard of quality. Proposed substitutions must be submitted, and shall conform to the standard of quality, as established in these specifications.
- 2. Specified product: Sikalastic Traffic System, as manufactured by Sika Corporation, Lyndhurst, New Jersey

Detail Coat:	Sikalastic 710NP Base Coat
Base Coat:	Sikalastic 710NP Base Coat
Top Coat:	Sikalastic 735AL Top Coat
Sand:	Oven-dried, > 90% silica, 30-70 or 20-40 mesh
Sealant:	Sikaflex 1a, Sikaflex 1CSL, or Sikaflex 2c NS/SL
Backer Rod:	Closed cell, dense, polyethylene, extruded rod

2.2 PERFORMANCE CRITERIA

- 1. The product shall be slip resistant and dark gray in color.
- 2. Elongation at break of base coat (ASTM D412): 800% +/- 100 psi
- 3. Tensile strength of top coat (ASTM D412): 3200 +/- 300 psi
- 4. Shore A hardness of top coat (ASTM D2240): 85 +/- 5 Shore A.
- 5. Tear resistance of top coat (Die C, (ASTM D-624): 300 +/- 30 pli
- 6. Total dry mil thickness of traffic system without sand: 55 mils

PART 3 - EXECUTION

3.1 PREPARATION

1. The surface must be mechanically prepared. Areas to be coated must be clean, sound, and free of laitance and contaminants. All loose and deteriorated concrete shall be removed by mechanical means, i.e., sandblasting, shotblasting, scabbler, scarifier, etc. Finished profile of substrate should conform to ICRI SP-3 to SP-5.

3.2 <u>APPLICATION</u>

1. Install sealant to all expansion, control and construction joints prior to application of the traffic system. Expansion joints should not be coated over with the traffic system.

- 2. Cracks up to 1/16 inch (non-working cracks) Apply prime coat 4 inches wide centered over crack and allow to dry to tack-free. Then apply 32 wet mils of detail coat 4 inches wide centered over crack and allow to dry to tack-free.
- 3. Cracks over 1/16 inch (working cracks) Rout or saw-cut crack to 1/4 inch by 1/4 inch minimum configuration. Blow out to clean with oil-free compressed air. Then apply sealant and allow to cure. Apply prime coat 2 inches wide on each side of sealant and allow to dry to tack-free. Then apply 32 wet mils of detail coat 4 inches wide centered over sealant and allow to dry to tack-free.
- 4. Penetrations After proper surface preparation form a 1 inch sealant cove with sealant and allow to cure. Then mask and apply 4 inches of prime coat in both the vertical and horizontal directions and allow to cure to tack-free. Apply 40 wet mils of detail coat over the prime coat and allow to cure to tack-free.
- 5. Bearing floor to wall joints (connected) After proper surface preparation form a 1 inch sealant cove with sealant and allow to cure. Then mask and apply 4 inches of prime coat in both the vertical and horizontal directions and allow to cure to tack-free. Apply 40 wet mils of detail coat over the prime coat and allow to cure to tack-free.
- 6. Bearing floor to wall joints (non-connected, less than 1 inch) After proper surface preparation place a backer rod inside the joint to control sealant configuration, install sealant and allow to cure. Then mask and apply 4 inches of prime coat in both the vertical and horizontal directions and allow to cure to tack-free. Apply 40 wet mils of detail coat over the prime coat and allow to cure to tack-free.
- 7. System termination Provide a 1/4 inch by 1/4 inch minimum saw cut where the traffic system is to be terminated in traffic areas. Mask and key in system to be level with the substrate at the termination edge.
- 8. Rough or pitted surface areas Apply leveling coat using high-quality rollers or squeegees and broadcast with sand to fill rough or pitted surfaces prior to traffic system installation. Leveling coat may also be mixed with sand to produce a mortar to be troweled into rough or pitted surfaces.
- 9. Traffic system application Apply base coat at 50 sqft./gal. (32 wet mils/25 dry mils) using high-quality rollers, flat or notched squeegees and allow to cure to tack-free. Apply first intermediate coat at 70 sqft./gal. (23 wet mils/15 dry mils), broadcast sand to rejection, and allow to cure to tack-free. Remove any excess sand and apply a second intermediate coat, again at 70 sqft./gal. (23 wet mils/15 dry mils), broadcast sand to rejection, and allow to cure to tack-free. Remove excess sand, then apply top coat at 100 sqft./gal. (15 wet mils/10 dry mils) and back roll to ensure coverage.
- 10. Adhere to all procedures, limitations and cautions for the product in the manufacturer's current printed literature.

3.3 <u>CLEANING</u>

1. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

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FLUID-APPLIED, TRAFFIC-BEARING, ELASTOMERIC AND WATERPROOFING MEMBRANE END OF SECTION

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FLUID-APPLIED, TRAFFIC-BEARING, ELASTOMERIC AND WATERPROOFING MEMBRANE

SECTION 07 1900 WATER REPELLENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water repellents applied to exterior masonry surfaces.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

- A. ASTM C140/C140M Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2014.
- B. ASTM D3960 Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2013).
- C. ASTM D5095 Standard Test Method for Determination of the Nonvolatile Content in Silanes, Siloxanes, and Silane-Siloxane Blends Used in Masonry Water Repellent Treatments; 1991 (Reapproved 2013).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a meeting at least one week prior to starting work; require attendance of affected installers; invite Architect and Owner.

1.05 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention; cautionary procedures required during application.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 Product Requirements, for additional provisions.
 - 2. Extra Water Repellent Material: Two gallons of the type installed.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.07 MOCK-UP

- A. Prepare a representative surface 36 by 36 inch in size using specified materials and preparation and application methods on surfaces identical to those to be coated; approved mock-up constitutes standard for workmanship.
- B. For proposed substitutions, prepare side-by-side mock-ups of specified and substitute products.
- C. Mock-up may remain as part of the Work.

1.08 FIELD CONDITIONS

- A. Protect liquid materials from freezing.
- B. Do not apply water repellent when ambient temperature is lower than 50 degrees F or higher than 100 degrees F.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Silane, Siloxane, Silane-Siloxane Blend, and Siliconate Water Repellents:
 - 1. BASF Construction Chemicals; www.buildingsystems.basf.com.
 - 2. Concrete Sealers USA; www.concretesealersusa.com.
 - 3. Dayton Superior Corporation; www.daytonsuperior.com.
- 4. PROSOCO, Inc; www.prosoco.com.
- 5. The QUIKRETE Companies; QUIKRETE® Concrete & Masonry Waterproofing Sealer: www.quikrete.com.
- 6. Substitutions: See Section 01 6000 Product Requirements.

2.02 MATERIALS

- A. Water Repellent: Non-glossy, colorless, penetrating, water-vapor-permeable, non-yellowing sealer, that dries invisibly leaving appearance of substrate unchanged.
 - 1. Applications: Vertical surfaces and non-traffic horizontal surfaces.
 - 2. VOC Content: Less than 600 g/L, when tested in accordance with ASTM D3960 or ASTM D5095.
 - 3. Moisture Absorption When Applied to Masonry: 5 percent, maximum, when tested in accordance with ASTM C140/C140M using masonry sample completely coated with water repellent.
 - 4. Maintains dry appearance when wetted.
 - 5. Products: Silane, siloxane, silane-siloxane blend, or siliconate that reacts chemically with concrete and masonry; minimum 90 percent nonvolatile content.
 - a. Substitutions: See Section 01 6000 Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify joint sealants are installed and cured.
- C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of water repellent.

3.02 PREPARATION

- A. Protection of Adjacent Work:
 - 1. Protect adjacent landscaping, property, and vehicles from drips and overspray.
 - 2. Protect adjacent surfaces not intended to receive water repellent.
- B. Prepare surfaces to be coated as recommended by water repellent manufacturer for best results.
- C. Remove loose particles and foreign matter.
- D. Remove oil and foreign substances with a chemical solvent that will not affect water repellent.
- E. Allow surfaces to dry completely to degree recommended by water repellent manufacturer before starting coating work.

3.03 APPLICATION

- A. Apply water repellent in accordance with manufacturer's instructions, using procedures and application methods recommended as producing the best results.
- B. Remove water repellent from unintended surfaces immediately by a method instructed by water repellent manufacturer.

END OF SECTION

SECTION 07 2119 FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Foamed-in-place insulation for sealing around new windows.

1.02 REFERENCE STANDARDS

- A. ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010.
- B. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- C. ASTM E283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- D. ASTM E2178 Standard Test Method for Air Permeance of Building Materials; 2013.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.
- C. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.
- D. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

1.04 QUALITY ASSURANCE

A. Air Barrier Association of America (ABAA) Evaluated Materials Program (EAP); www.airbarrier.org/sle: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.

1.05 FIELD CONDITIONS

- A. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.
- B. Do not apply foam when temperature is within 5 degrees F of dew point.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Foamed-In-Place Insulation: Minimal expanding polyurethane foam.
 - Products:
 - a. Great Stuff Window and Door Insulating Foam Sealant. Greatstuff.dow.com

PART 3 EXECUTION

1.

3.01 EXAMINATION

- A. Verify work within construction spaces or crevices is complete prior to insulation application.
- B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation or overcoat adhesion.

3.02 APPLICATION

A. Apply insulation in accordance with manufacturer's instructions.

- B. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts of windows and doors. Confirm with window manufacturer that spray insulation will not void warranty of windows.
- C. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.03 FIELD QUALITY CONTROL

- A. Field inspections and tests will be performed by an independent testing agency under provisions of Section 01 4000 Quality Requirements.
- B. Inspection will include verification of insulation thickness and density.

END OF SECTION

SECTION 07 2400

EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus; 2011.
- B. ASTM C150/C150M Standard Specification for Portland Cement; 2015.
- C. ASTM C1397 Standard Practice for Application of Class PB Exterior Insulation and Finish Systems (EIFS) and EIFS with Drainage; 2013.
- D. ASTM D968 Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive; 2017.
- E. ASTM D2247 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity; 2015.
- F. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- G. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
- H. ASTM E2273 Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies; 2003 (Reapproved 2011).
- I. ASTM G153 Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.
- J. ASTM G155 Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.
- K. ICC-ES AC219 Acceptance Criteria for Exterior Insulation and Finish Systems; 2009, with Editorial Revision (2014).
- L. ICC-ES AC235 Acceptance Criteria for EIFS Clad Drainage Wall Assemblies; 2009, with Editorial Revision (2012).
- M. NFPA 259 Standard Test Method for Potential Heat of Building Materials; 2018.
- N. NFPA 268 Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source; 2012.
- O. NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012.

1.02 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on system materials, product characteristics, performance criteria, and system limitations.

1.03 QUALITY ASSURANCE

A. Maintain copy of specified installation standard and manufacturer's installation instructions at project site during installation.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to project site in manufacturer's original, unopened containers with labels intact. Inspect materials and notify manufacturer of any discrepancies.
- B. Storage: Store materials as directed by manufacturer's written instructions.

1.05 FIELD CONDITIONS

A. Do not prepare materials or apply EIFS under conditions other than those described in the manufacturer's written instructions.

- B. Do not prepare materials or apply EIFS during inclement weather unless areas of installation are protected. Protect installed EIFS areas from inclement weather until dry.
- C. Do not install coatings or sealants when ambient temperature is below 40 degrees F.
- D. Do not leave installed insulation board exposed to sunlight for extended periods of time.

1.06 WARRANTY

- A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's standard material warranty, covering a period of not less than 5 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design:

2.02 EXTERIOR INSULATION AND FINISH SYSTEM

- A. Exterior Insulation and Finish System: BARRIER type; reinforced finish coating on insulation board adhesive-applied direct to substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate in tested samples.
- B. Fire Characteristics:
 - 1. Flammability: Pass, when tested in accordance with NFPA 285.
 - 2. Ignitibility: No sustained flaming when tested in accordance with NFPA 268.
 - 3. Potential Heat of Foam Plastic Insulation Tested Independently of Assembly: No portion of the assembly having potential heat that exceeds that of the insulation sample tested for flammability (above), when tested in accordance with NFPA 259 with results expressed in Btu per square foot.
- C. Water Penetration Resistance: No water penetration beyond the plane of the base coat/insulation board interface after 15 minutes, when tested in accordance with ASTM E331 at 6.24 psf differential pressure with tracer dye in the water spray; include in tested sample at least two vertical joints and one horizontal joint of same type to be used in construction; disassemble sample if necessary to determine extent of water penetration.
- D. Salt Spray Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 300 hours exposure in accordance with ASTM B117, using at least three samples matching intended assembly, at least 4 by 6 inches in size.
- E. Freeze-Thaw Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 10 cycles, when tested in accordance with ICC-ES AC219 or ICC-ES AC235.
- F. Weathering Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 2000 hours of accelerated weathering conducted in accordance with ASTM G153 Cycle 1 or ASTM G155 Cycles 1, 5, or 9.
- G. Water Degradation Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 14 days exposure, when tested in accordance with ASTM D2247.
- H. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.
- I. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in accordance with ASTM D968 with 113.5 gallons of sand.

2.03 MATERIALS

- A. Finish Coating Top Coat: 100% acrylic-based smooth elastomeric finish. To be used on all existing EIFS surfaces as well as new and patched areas of EIFS.
 - 1. Texture: BASF Wall Systems Senerlastic Coating.
 - 2. Color: As selected by Architect and Owner from standard and custom colors.

- B. Base Coat: Dry mix polymer adhesive and base coat containing Portland cement.
 - 1. Manufacturers:
 - a. Senergy, Alpha Dry Base Coat.
 - b. Substitutions: See Section 01 6000 Product Requirements.
- C. Reinforcing Mesh: Balanced, open weave glass fiber fabric, treated for compatibility and improved bond with coating, weight, strength, and number of layers as required to meet required system impact rating.
 - 1. Manufacturers:
 - a. Senergy, Flexguard Reinforcing Meshes
 - b. Substitutions: See Section 01 6000 Product Requirements.
- D. Water-Resistive Barrier Coating: Fluid-applied air and water barrier membrane; applied to substrate; Senershield RS

2.04 ACCESSORY MATERIALS

- A. Insulation Adhesive: Type required by EIFS manufacturer for project substrate.
- B. Trim: EIFS manufacturer's standard PVC or galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.
- C. Sealant Materials: Compatible with EIFS materials and as recommended by EIFS manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate is sound and free of oil, dirt, other surface contaminants, efflorescence, loose materials, or protrusions that could interfere with EIFS installation and is of a type and construction that is acceptable to EIFS manufacturer. Do not begin work until substrate and adjacent materials are complete and thoroughly dry.
- B. Verify that substrate surface is flat, with no deviation greater than 1/4 in when tested with a 10 ft straightedge.

3.02 INSTALLATION - GENERAL

- A. Install in accordance with EIFS manufacturer's instructions and ASTM C1397.
 - 1. Where different requirements appear in either document, comply with the most stringent.
 - 2. Neither of these documents supercedes provisions of Contract Documents that defines contractual relationships between parties or scope of this work.

3.03 INSTALLATION - INSULATION

- A. Install in accordance with manufacturer's instructions.
- B. Install back wrap reinforcing mesh at all openings and terminations that are not to be protected with trim.
- C. On wall surfaces, install boards horizontally.
- D. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous flush insulation surface, with no gaps in excess of 1/16 inch.
- E. Fill gaps greater than 1/16 inch with strips or shims cut from the same insulation material.
- F. Rasp irregularities off surface of installed insulation board.
- G. Adhesive Attachment: Use method recommended by EIFS manufacturer.

END OF SECTION

SECTION 07 5323

ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING (EPDM)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. EPDM membrane roofing system, including all components specified.
- B. Comply with the published recommendations and instructions of the roofing membrane manufacturer, at http://manual.fsbp.com.
- C. Commencement of work by Contractor shall constitute acknowledgement by Contractor that this specification can be satisfactorily executed, under the project conditions and with all necessary prerequisites for warranty acceptance by roofing membrane manufacturer. No modification of the Contract Sum will be made for failure to adequately examine the Contract Documents or the project conditions.

1.02 REFERENCE STANDARDS

- A. ASTM D4811/D4811M Standard Specification for Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing; 2016.
- B. FM 4470 Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction; 2016.
- C. FM DS 1-28 Wind Design; 2016.
- D. FM DS 1-29 Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System; 2016.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Provide membrane manufacturer's printed data sufficient to show that all components of roofing system, including insulation and fasteners, comply with the specified requirements and with the membrane manufacturer's requirements and recommendations for the system type specified; include data for each product used in conjunction with roofing membrane.
- C. Samples: Submit samples of each product to be used.
- D. Shop Drawings: Provide:
 - 1. The roof membrane manufacturer's standard details customized for this project for all relevant conditions, including flashings, base tie-ins, roof edges, terminations, expansion joints, penetrations, and drains.
- E. Executed Warranty.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original containers, dry and undamaged, with seals and labels intact and legible.
- B. Store materials clear of ground and moisture with weather protective covering.
- C. Keep combustible materials away from ignition sources.

1.05 WARRANTY

- A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- B. Comply with all warranty procedures required by manufacturer, including notifications, scheduling, and inspections.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer - Roofing System: Firestone Building Products LLC, Carmel, IN: www.firestonebpco.com/#sle.

2.02 ROOFING SYSTEM DESCRIPTION

- A. Roofing System: Ethylene-propylene-diene-monomer (EPDM) single-ply membrane.
 - Provide assembly complying with Factory Mutual Corporation (FM) Roof Assembly Classification, FM DS 1-28 and FM DS 1-29, and meeting minimum requirements of FM 1-90 wind uplift rating.

2.03 EPDM MEMBRANE MATERIALS

- Roofing and Flashing Membrane: Black, cured synthetic single-ply membrane composed of ethylene propylene diene terpolymer (EPDM) with the following properties:
 Nominal Thickness Tolerance: Plus/minus 10 percent.
- B. Membrane Fasteners: Type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer.
- C. Flashing Membrane: Self-curing, non-reinforced membrane composed of nonvulcanized EPDM rubber, complying with ASTM D4811/D4811M Type II, and with the following properties:
 - 1. Thickness: 0.055 inch.
 - 2. Acceptable Product: RubberGard EPDM FormFlash by Firestone.
- D. Self-Adhesive Flashing Membrane: Semi-cured 45 mil EPDM membrane laminated to 35 mil EPDM tape adhesive; QuickSeam Flashing by Firestone.
- E. Pre-Molded Pipe Flashings: EPDM, molded for quick adaptation to different sized pipes; Firestone EPDM Pipe Flashing.
- F. Self-Adhesive Lap Splice Tape: 35 mil EPDM-based, formulated for compatibility with EPDM membrane and high-solids primer; QuickSeam Splice Tape by Firestone.
- G. Splice Adhesive: Synthetic polymer-based, formulated for compatibility with EPDM membrane and metal surfaces; SA-1065 Splice Adhesive by Firestone.
- H. Adhesive Primer: Synthetic rubber based primer formulated for compatibility with EPDM membrane and tape adhesive, with VOC content less than 2.1 lb/gal; QuickPrime Plus LVOC by Firestone.
- I. Seam Edge Treatment: EPDM rubber-based sealant, formulated for sealing exposed edges of membrane at seams; Lap Sealant HS by Firestone.
- J. Pourable Sealer: Two-part polyurethane, two-color for reliable mixing; Pourable Sealer by Firestone.
- K. Water Block Seal: Butyl rubber sealant for use between two surfaces, not exposed; Water Block Seal by Firestone.
- L. Metal Plates and Strips Used for Fastening Membrane and Insulation: Steel with Galvalume coating; corrosion-resistance meeting FM 4470 criteria.
- M. Termination Bars: Aluminum bars with integral caulk ledge; 1.3 inches wide by 0.10 inch thick; Firestone Termination Bar by Firestone.

PART 3 INSTALLATION

3.01 GENERAL

A. Install roofing, insulation, flashings, and accessories in accordance with roofing manufacturer's published instructions and recommendations for the specified roofing system. Where manufacturer provides no instructions or recommendations, follow good roofing practices and industry standards. Comply with federal, state, and local regulations.

- B. Obtain all relevant instructions and maintain copies at project site for duration of installation period.
- C. Do not start work until Pre-Installation Notice has been submitted to manufacturer as notification that this project requires a manufacturer's warranty.
- D. Perform work using competent and properly equipped personnel.
- E. Temporary closures, which ensure that moisture does not damage any completed section of the new roofing system, are the responsibility of the applicator. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.
- F. Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice; do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application; consult manufacturer for recommended procedures during cold weather. Do not work with sealants and adhesives when material temperature is outside the range of 60 to 80 degrees F.
- G. Protect adjacent construction, property, vehicles, and persons from damage related to roofing work; repair or restore damage caused by roofing work.
 - 1. Protect from spills and overspray from bitumen, adhesives, sealants and coatings.
 - 2. Particularly protect metal, glass, plastic, and painted surfaces from bitumen, adhesives, and sealants within the range of wind-borne overspray.
 - 3. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.
- H. Until ready for use, keep materials in their original containers as labeled by the manufacturer.
- I. Consult membrane manufacturer's instructions, container labels, and Material Safety Data Sheets (MSDS) for specific safety instructions. Keep all adhesives, sealants, primers and cleaning materials away from all sources of ignition.

3.02 EXAMINATION

- A. Examine roof deck to determine that it is sufficiently rigid to support installers and their mechanical equipment and that deflection will not strain or rupture roof components or deform deck.
- B. Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing with roofing work.
- C. Examine roof substrate to verify that it is properly sloped to drains.
- D. Verify that the specifications and drawing details are workable and not in conflict with the roofing manufacturer's recommendations and instructions; start of work constitutes acceptable of project conditions and requirements.

3.03 PREPARATION

- A. Take appropriate measures to ensure that fumes from adhesive solvents are not drawn into the building through air intakes.
- B. Prior to proceeding, prepare roof surface so that it is clean, dry, and smooth, and free of sharp edges, fins, roughened surfaces, loose or foreign materials, oil, grease and other materials that may damage the membrane.
- C. Fill all surface voids in the immediate substrate that are greater than 1/4 inch wide with fill material acceptable insulation to membrane manufacturer.
- D. Seal, grout, or tape deck joints, where needed, to prevent bitumen seepage into building.

3.04 SINGLE-PLY MEMBRANE INSTALLATION

- A. Beginning at low point of roof, place membrane without stretching over substrate and allow to relax at least 30 minutes before attachment or splicing; in colder weather allow for longer relax time.
- B. Lay out the membrane pieces so that field and flashing splices are installed to shed water.

- C. Install membrane without wrinkles and without gaps or fishmouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.
- D. Edge Securement: Secure membrane at all locations where membrane terminates or goes through an angle change greater than 2 in 12 inches using mechanically fastened reinforced perimeter fastening strips, plates, or metal edging as indicated or as recommended by roofing manufacturer.
 - 1. Exceptions: Round pipe penetrations less than 18 inches in diameter and square penetrations less than 4 inches square.
 - 2. Metal edging is not merely decorative; ensure anchorage of membrane as intended by roofing manufacturer.

3.05 FLASHING AND ACCESSORIES INSTALLATION

- A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.
- B. Metal Accessories: Install metal edgings, gravel stops, and copings in locations indicated on the drawings, with horizontal leg of edge member over membrane and flashing over metal onto membrane.
 - 1. Follow roofing manufacturer's instructions.
 - 2. Remove protective plastic surface film immediately before installation.
 - 3. Install water block sealant under the membrane anchorage leg.
 - 4. Flash with manufacturer's recommended flashing sheet unless otherwise indicated.
 - 5. Where single application of flashing will not completely cover the metal flange, install additional piece of flashing to cover the metal edge.
 - 6. If the roof edge includes a gravel stop and sealant is not applied between the laps in the metal edging, install an additional piece of self-adhesive flashing membrane over the metal lap to the top of the gravel stop; apply seam edge treatment at the intersections of the two flashing sections.
 - 7. When the roof slope is greater than 1:12, apply seam edge treatment along the back edge of the flashing.

3.06 FINISHING AND WALKWAY INSTALLATION

A. Install walkways at access points to the roof, around rooftop equipment that may require maintenance, and where indicated on the drawings.

3.07 FIELD QUALITY CONTROL

- A. Inspection by Manufacturer: Provide final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer specifically to inspect installation for warranty purposes (i.e. not a sales person).
- B. Perform all corrections necessary for issuance of warranty.

3.08 CLEANING

- A. Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.
- B. Repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of manufacturers of components and surfaces.
- C. Remove leftover materials, trash, debris, equipment from project site and surrounding areas.

3.09 PROTECTION

A. Where construction traffic must continue over finished roof membrane, provide durable protection and replace or repair damaged roofing to original condition.

END OF SECTION

SECTION 07 6200 SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counter flashings, and downspouts.
- B. Sealants for joints within sheet metal fabrications.

1.2 REFERENCE STANDARDS

- A. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- B. ASTM B209M Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- C. ASTM C920 Standard Specification for Elastomeric Joint Sealants; 2014a.
- D. ASTM D4586/D4586M Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).
- E. CDA A4050 Copper in Architecture Handbook; current edition.
- F. SMACNA (ASMM) Architectural Sheet Metal Manual; 2012.

1.3 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Samples: Submit two samples 4 by 4 inch in size illustrating metal finish color.
- 1.4 QUALITY ASSURANCE
 - A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.
 - B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of documented experience.
- 1.5 DELIVERY, STORAGE, AND HANDLING
 - A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
 - B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Sheet Metal Flashing and Trim Manufacturers:
 - 1. Fairview Architectural LLC; VitraEdge :www.fairviewarchitecturalusa.com/sle.
 - 2. Petersen Aluminum Corporation; www.pac-clad.com/sle.

2.2 SHEET MATERIALS

- A. Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) (0.81 mm) thick; anodized finish of color as selected.
- B. Pre-Finished Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) (0.81 mm) thick;
 - 1. Color: As selected by Architect from manufacturer's standard colors.

2.3 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.
- D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; seam for rigidity, seal with sealant.
- F. Fabricate flashings to allow toe to extend 2 inches (50 mm) over roofing gravel. Return and brake edges.

2.4 ACCESSORIES

- A. Fasteners: Stainless steel, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Concealed Sealants: Non-curing butyl sealant.
- D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- E. Plastic Cement: ASTM D4586/D4586M, Type I.
- F. Reglets: Recessed type, rigid extruded PVC.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil (0.4 mm).

3.3 INSTALLATION

- A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- B. Apply plastic cement compound between metal flashings and felt flashings.
- C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D. Secure gutters and downspouts in place with fasteners.
- E. Set splash pads under downspouts.

END OF SECTION 07 6200

SECTION 07 9200 JOINT SEALANTS

PART 2 PRODUCTS

- 1.1 MANUFACTURERS
 - A. Nonsag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 - 1. Adhesives Technology Corporation: www.atcepoxy.com.
 - 2. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - 3. Bostik Inc: www.bostik-us.com.
 - 4. Dow Corning Corporation: www.dowcorning.com/construction.
 - 5. Sika Corporation: www.usa-sika.com.
 - 6. W.R. Meadows, Inc: www.wrmeadows.com.

1.2 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on the drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated below.
 - 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - c. Other joints indicated below.
 - 3. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use nonsag non-staining silicone sealant, unless otherwise indicated.
- C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
 - 1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant;

- 2. In Sound-Rated Assemblies: Acrylic emulsion latex sealant; Type
- Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant; Type
- D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, food processing areas, and; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items
- E. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".
- 1.3 JOINT SEALANTS GENERAL
 - A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in South Coast Air Quality Management District (SCAQMD); Rule 1168.
 - B. Colors: As selected by architect from full range of available colors.
- 1.4 NONSAG JOINT SEALANTS
 - A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 50 percent, minimum.
 - 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
 - 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 - 4. Color: To be selected by Architect from manufacturer's standard range.
 - 5. Products:
 - a. Dow Corning Corporation; 790 Silicone Building Sealant: www.dowcorning.com/construction.
 - b. Dow Corning Corporation; 791 Silicone Weatherproofing Sealant: www.dowcorning.com/construction.
 - c. Pecora Corporation; 890NST Ultra Low Modulus Architectural Silicone Sealant Class 100: www.pecora.com.
 - d. Sika Corporation; Sikasil WS-290: www.usa-sika.com.
 - e. Substitutions: See Section 01 6000 Product Requirements.
 - B. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Color: To be selected by Architect from manufacturer's standard range.
 - C. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
 - 1. Color: White.
 - D. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Color: To be selected by Architect from manufacturer's standard range.

- E. Nonsag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Hardness Range: 40 to 50, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: To be selected by Architect from manufacturer's standard range.
- F. Polysulfide Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Color: To be selected by Architect from manufacturer's standard range.
 - 3. Products:
 - a. W.R. Meadows, Inc; Deck-O-Seal One Step: www.wrmeadows.com.
 - b. Substitutions: See Section 01 6000 Product Requirements.
- G. Acrylic-Urethane Sealant: Water-based; ASTM C920, Grade NS, Uses M and A; single component; paintable; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
- H. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
 - 1. Color: To be selected by Architect from manufacturer's standard range.
 - 2. Products:
 - a. Franklin International, Inc.; Titebond GREENchoice Acoustical Smoke & Sound Sealant: www.titebond.com/sle.
 - b. Hilti, Inc.; CP 506 Smoke and Acoustical Sealant: www.us.hilti.com/#sle.
 - c. Pecora Corporation; AC-20 + Silicone Acrylic Latex Caulking Compound: www.pecora.com.
 - d. Sherwin-Williams Company; White Lightning 3006 Siliconized Acrylic Latex Caulk: www.sherwin-williams.com.

1.5 SELF-LEVELING SEALANTS

- A. Rigid Self-Leveling Polyurethane Joint Filler: Two part, low viscosity, fast setting; intended for cracks and control joints not subject to significant movement.
 - 1. Hardness Range: Greater than 100, Shore A, and 50 to 80, Shore D, when tested in accordance with ASTM C661.
 - 2. Products:
 - a. ARDEX Engineered Cements; ARDEX ARDIFIX: www.ardexamericas.com.
 - b. Substitutions: See Section 01 6000 Product Requirements.
- B. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
 - 1. Composition: Multicomponent, 100 percent solids by weight.
 - 2. Hardness: Minimum of 85 (Shore A) or 35 (Shore D), when tested in accordance with ASTM D2240 after 7 days.
 - 3. Color: Concrete gray.

- 4. Joint Width, Minimum: 1/8 inch.
- 5. Joint Width, Maximum: 1/4 inch
- 1.6 ELASTIC, JOINT AND CRACK SEALANTS
 - A The specified product has been selected to establish a minimum standard of quality that will be accepted. The listing of the product is not intended to limit competition, but to establish the standard of quality. Proposed substitutions must be submitted, and shall conform to the standard of quality, as established in these specifications.
 - B Specified product: Sika Hyflex 150 LM, as manufactured by Sika Corporation, Lyndhurst, New Jersey Primer: Provide bond tests to determine if necessary Backer Rod:Closed cell, dense, polyethylene, extruded rod
 - C PERFORMANCE CRITERIA
 - 1. The product shall be a 1-component, non-sag, Silicone / polyurethane-based, Hybrid elastomeric sealant.
 - 2. Shore A Hardness (ASTM C661): 27
 - 3. Movement capability (ASTM C719): + /- 50%.

4.	Adhesion in peel to concrete (ASTM C794):	Aluminum:	36.5 pli
		Glass:	33.8 pli
		Concret	e: 31.0 pli

- 5. 100% Modulus (ASTM D412): 30 psi
- 6. Stain & Color Change (ASTM C510): None
- 7. Tack-free time (ASTM C679): <1 hr

1.7 ELASTIC, JOINT AND CRACK SEALANTS

- A The specified product has been selected to establish a minimum standard of quality that will be accepted. The listing of the product is not intended to limit competition, but to establish the standard of quality. Proposed substitutions must be submitted, and shall conform to the standard of quality, as established in these specifications.
- B Specified product: Sikaflex 15 LM, as manufactured by Sika Corporation, Lyndhurst, New Jersey Primer: Provide bond tests to determine if necessary Backer Rod:Closed cell, dense, polyethylene, extruded rod
- C PERFORMANCE CRITERIA
 - 1. The product shall be a 1-component, non-sag, polyurethane-based, elastomeric sealant.
 - 2. Shore A Hardness (ASTM D-2240): 20 +/- 5.
 - 3. Movement capability: + 100/ 50%.

- 4. Adhesion in peel to concrete (TT-S-00230C): 30 lb.
- 5. Recovery (ASTM C719): > 80%.
- 6. Product must be suitable for total water immersion.
- 7. Tack-free time (TT-S-00230C): 3 to 6 hours.

1.8 <u>SEALANTS</u>

- A The specified product has been selected to establish a minimum standard of quality that will be accepted. The listing of the product is not intended to limit competition, but to establish the standard of quality. Proposed substitutions must be submitted, and shall conform to the standard of quality, as established in these specifications.
- B. Specified product: Sikasil WS295, as manufactured by Sika Corporation, Lyndhurst, New Jersey
 Backer Rod: Closed cell, dense, polyethylene, extruded rod
- C PERFORMANCE CRITERIA
 - Description Sikasil-WS 295 sealant is a one part, neutral cure, low to no bleed silicone sealant for use in most common weatherproofing applications on a wide variety of materials. Meets the requirements of ASTM C-920, Type S, Grade NS, Class 50, Use NT, M, G, A, O; TT-S-00230C, Type II, Class A; CAN/CGSB-19.13-M87, AAMA 802.3 Type II, AAMA 803.3, AAMA 805.2, AAMA 808.3
 - 2. Uncured Properties at 77°F (25°C), 50% R.H.
 - 3. Tool/Work Time (Initial Skin) 20-30 minutes
 - 4. Cure Time (ASTM C-679) 7-14 days
 - 5. Flow, Sag, Slump (ASTM C-639) no sag
 - 6. Full Adhesion (ASTM C-679) 7-14 days
 - 7. Tack Free Time (ASTM C-679) 50 min.
 - 8. Cured Properties after 7 days at 77°F (25°C), 50% R.H.
 - 9. Dynamic Movement Capability (ASTM C-719) +/-50%
 - 10. Elongation (ASTM D-412) 800%
 - 11. Shore A Hardness (ASTM C-661) 25
 - 12. Ozone/UV Resistance (ASTM D-1149) Excellent
 - 13. Peel Strength (ASTM C-794) 30 pli
 - 14. on aluminum, glass and concrete
 - 15. Staining, Color Change (ASTM C-510) none
 - 16. Staining on Porous Substrates (ASTM C-1248) no staining
 - 17. 100% Modulus (ASTM D-412) 55 psi (0.38 MPa)
 - 18. Service Temperature Range -80°F to 350°F
 - 19. Tensile Strength (ASTM D-412) 200 psi (1.38 MPa)
 - 20. Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing condition

1.9 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
- B. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

END OF SECTION 07 9200

SECTION 08 1113

HOLLOW METAL DOORS AND FRAMES

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide material, accessories, tools, equipment and labor as required for the complete installation of the hollow metal doors and frames as shown on the Contract Drawings and described in the Specifications.
- B. The supplier for the metal doors and frames shall coordinate with the Owner's alarm system vendor and security system vendor to provide the appropriate magnetic releases; automatic operator; electronic releases; and, other electronic components to work with the Owner's alarm system; security system; card reader system; and, locking system where such systems are incorporated into the hollow metal doors and frames.

1.02 1.02 SUBMITTALS

- A. Product data for each type of door and frame indicated, including door designation, type, level and model, material description, core description, construction details, label compliance, sound and fire-resistance ratings, and finishes.
- B. Shop drawings showing the following:
 - 1. Elevations of each door design
 - 2. Details of doors including vertical and horizontal edge details.
 - 3. Frame details for each frame type including dimensioned profiles.
 - 4. Details and locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of anchorages, accessories, joints, and connections.
 - 7. Coordination of glazing frames and stops with glass and glazing requirements.
 - 8. Door Schedules using the same reference designations indicated on Drawings in
 - a. Preparing schedule for doors and frames.

1.03 1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver Hollow-Metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to factory-finished units.
 - 2. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum four inch high wood blocking. Provide minimum one-forth inch space between each stacked door to permit air circulation.

PART 2 – PRODUCTS

2.01 2.01 MANUFACTURERS

- A. The products specified are those of Curries Company. Subject to compliance with requirements stated, equivalent products of the following manufacturers will be acceptable for use on this project.
 - 1. Curries Company
 - 2. Ceco Door Products; a United Dominion Company
 - 3. Timely

2.02 2.02 MANUFACTURER'S SERIES

- A. Metal doors and frames shall be the following as manufactured by Curries Company
 - 1. Doors Series 707.
 - 2. Doors Series 707 Fire-Rated U.L. Labeled Fire Doors
 - 3. Frames Series "M" Welded & Ground Smooth, for Doors at Masonry Walls, Labeled and Non-labeled as required.
 - 4. Refer to Door Schedule for door thicknesses

2.03 2.02 INTERIOR METAL DOORS & FRAMES

- A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified. Doors shall be made of commercial quality, level, cold-rolled steel conforming to ASTMA A 366 and free of scale, pitting, or other surface defects.
- B. Doors and Frames: SDI A250.8, Level 1. At locations indicated in the Door and Frame Schedule.
 - 1. Physical Performance: Level 1 according to SDI A 250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated, cold-rolled steel sheet, minimum thickness of .0478 inch.
 - 1) Frames:
 - (a) Materials: Uncoated, steel sheet, minimum thickness of .053 inch.
 - (1) Sidelite Frames: Fabricated from same thickness material as adjacent door frame.
 - (2) Construction: Knock down.
 - (b) Exposed Finish: Prime

C. Timely Door Frames

- 1. "C" Series, 1.2 mm (18 guage) thick,
- D. Casings

1. Provide Steel Casings formed to be applied to heat treated clips on frame face after frame is anchored to wall

2. Standard Steel - TA-8 with 6 mm (1/4 inch) reveal, on steel, stainless steel, and/or brass frames. Fit factory assembled units with MiterGard corner alignment clips.

2.04 2.03 EXTERIOR METAL DOORS & FRAMES

- A. Construct exterior doors and frames to comply with the standard indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified. Doors shall be made of commercial quality, level, cold-rolled steel conforming to ASTMA A 366 and free of scale, pitting, or other surface defects.
- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2. At locations indicated in the Door and Frame Schedule.
 - 1. Physical Performance: Level 2 according to SDI A 250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A40 coating.
 - d. Core: Polystyrene
 - 1) Frames:
 - (a) Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 Coating.
 - (1) Construction: Knock down.
 - (b) Exposed Finish: Prime

2.05 2.04 METAL DOORS & FRAMES

A. Design and Construction

- 1. All doors shall be custom made, of the types and sizes shown on approved Shop Drawings, and shall be seams or joints on their faces or vertical edges. Minimum door thickness shall be one and three-quarters inch
- 2. All doors shall be strong, rigid and neat in appearance, free from warpage or buckle. Corner bends shall be true and straight and of minimum radius for the gauge of metal used.
- 3. Top and bottom of all doors shall be closed with a continuous recessed steel channel not less than sixteen gauge, extending the full width of the door and spot welded to both faces. Exterior doors shall have additional flush closing channel at their top edges and where required for attachment of weather-stripping, a flush closure also at their bottom edges. Openings shall be provided in the bottom closure of exterior doors to permit the escape of entrapped moisture.
- 4. Edge profiles shall be provided on both vertical edges of doors as follows:
 - a. Single-acting swing doors shall be beveled one-eighth inch in two inches
 - b. Double-acting swing doors shall be rounded on two and one-eighth inches radius.
 - 1) All hardware furnished by the hardware contractor for single-acting doors shall be designed for beveled edges
 - (a) Hardware Reinforcements:
 - (1) Doors shall be mortised, reinforced, drilled and tapped at the factory for fully template hardware only, in accordance with the approved hardware schedule and templates provided by hardware contractor. Where surface-mounted hardware or hardware, interrelation of which is to be adjusted upon installation, is to be applied, doors shall be reinforcing plates only. Drilling and tapping shall be done in the field.
 - (2) Doors shall be prepared only for hardware to be installed. Doors prepared for hardware not necessary will not be accepted, except all doors shall be reinforced for closers.
 - (3) Minimum gauges for hardware reinforcing plates shall be as follows:
 - (4) Hinge and Pivot reinforcement: seven gauge
 - (5) Reinforcements for lock face, flush bolts, concealed or surface mounted closer: Twelve gauge
 - c. Glass Molding and Stops:
 - Where specified or scheduled, doors shall be provided with hollow metal moldings to secure glazing in accordance with glass opening sizes shown on approved Shop Drawings.
 - 2) Fixed moldings shall be securely welded to the door on the security side.
 - Loose stops shall be not less than twenty gauge steel, with mitered corner joints, secured to the framed opening by cadmium –coated or zinc-coated countersunk screws. Snap-on attachments will not be permitted.
 - 4) The bottom of the glass surf ace of the vision panels shall be not more than forty-three inches above the finished floor, unless there is a bottom vision panel extending from the top of the bottom rail to the bottom of the intermediate rail.
 - 5) Where specified or scheduled, door louvers shall be one inch thick, inverted "Y" design, manufactured of sixteen gauge extruded aluminum, with approximately forty-one percent free area. Louvers shall be of the welded blade type of construction. Louvers pierced into the face sheets will not be permitted. Molding shall be extruded aluminum, adjustable to fit doors thicknesses from one and one-quarter inches inch to two inches center louver in thickness of door.
 - d. Finish:
 - 1) After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, lever and free of all irregularities

- 2) Doors shall then be chemically treated to insure maximum paint adhesion and shall be coated, on all exposed surfaces, with a rust-inhibitive primer, which is fully cured before shipping.
- e. Regulatory Requirements:
 - Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fireprotection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 2) Fire-Rated Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for the fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.
 - 3) 3.

2.06 2.05 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 - 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
 - 3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
 - 4. Post installed Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
 - 5. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:
 - a. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
 - b. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than two inch height adjustment. Terminate bottom of frames at finish floor surface.

2.07 2.06 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B, free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet ASTM A 653/A 653M, Commercial Steel (CS), Type B
- D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designations; mill phosphatized.
 - 1. for anchors built into exterior walls, steel sheet complying with ASDTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B
 - 2. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
 - 3. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
 - 4. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.
 - 5. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
 - 6. Glazing: Comply with requirements in Section "Glazing."

7. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.08 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:
 - 1. Fire Door Cores: As required to provide fire-protection ratings indicated.
 - 2. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.
 - 3. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets.
 - 4. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
 - 5. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 - 6. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
 - 7. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - a. Sidelite Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
 - b. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - c. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 - d. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
 - e. Jamb Anchors: Provide number and spacing of anchors as follows:
 - Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:
 - (a) Two anchors per jamb up to 60 inches high.
 - (b) Three anchors per jamb from 60 to 90 inches high.
 - (c) Four anchors per jamb from 90 to 120 inches high.
 - (d) Four anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
 - (1) Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - (2) Three anchors per jamb up to 60 inches high.
 - (3) Four anchors per jamb from 60 to 90 inches high.
 - (4) Five anchors per jamb from 90 to 96 inches high.
 - (5) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 - (6) Compression Type: Not less than two anchors in each frame.

- (7) Post installed Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
- (e) Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - (1) Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - (2) Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- (f) Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- (g) Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
 - (1) Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - (2) Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
- (h) Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 - (1) Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 - (2) Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 - (3) Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 - (4) Provide loose stops and moldings on inside of hollow-metal work.
 - (5) Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.09 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead-free and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.10 ACCESSORIES

- A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch-thick, cold-rolled steel sheet set into 0.032-inch thick steel frame.
 - 1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.
- B. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- C. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 3.02 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelights, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMMHMMA 840 as required by standards specified.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that will be filled with grout containing anti-freezing agents.
 - 1) Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post installed expansion anchors.
 - 2) Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
 - 3) Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 - 4) Concrete Walls: Solidly fill space between frames and concrete with mineralfiber insulation.
 - 5) In-Place Concrete or Masonry Construction: Secure frames in place with post installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 - 6) In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
 - 7) Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - (a) Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - (b) Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - (c) Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - (d) Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire Rated Steel Doors:
 - a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
 - c. At Bottom of Door: 5/8 inch plus or minus 1/32 inch.
 - d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.
 1) Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- D. Glazing: Comply with installation requirements in Section "Glazing" and with hollow metal manufacturer's written instructions.
 - 1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.04 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

Page 1

Project Specific Specification MULTI-FAMILY

Part 1 - GENERAL

1.01 Work Included

- A. The work under this section shall include the furnishing of all items shown on the drawings and as specified, including but not limited to, the following:
 - 1. Knocked down, site assembled prefinished steel door frames

2. Knocked down, site assembled sidelight, borrowed light, transom, and fullbound access door frames

- 3. Pocket trim jambs and casings (Pocket frame and hardware not included)
- 4. Knocked down, site assembled Double Egress steel door frames

1.02 Related Sections

- A. Section 01 30 00 Coordination, Site meetings
- B. Section 01 60 00 Product Requirements
- C. Section 08 11 13 Hollow Metal Doors and Frames Double Egress Frames
- D. Section 08 12 16 Aluminum frames
- E. Section 08 14 00 Prefinished Wood Doors
- F. Section 08 71 00 Hardware
- G. Section 08 80 00 Glazing

1.03 References

- A. ASTM A653 Standard for hot dipped galvanized steel material
- B. UBC 7-2-97, UBC 7-4-97 Positive Pressure Fire Test Certification.
- C. UL 10B Fire test of Door Assemblies and UL10C Standard for Positive Pressure Fire Tests of Door Assemblies
- D. NFPA 80 Fire Doors and Windows (Latest Edition)
- E. NFPA-101 Life Safety Codes (Latest Edition)
- F. ASTM D2197 Standard Test Method for Adhesion of Organic Coatings by Scrape Adhesion.
- G. ASTM D2247 Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
- H. ASTM D2794 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- I. ASTM D3361 Standard Practice for Unfiltered Open-Flame Carbon-Arc exposures of Paint and Related Coatings.
- J. ASTM B117 Standard test for salt spray testing

1.04 Submittals

- A. Section 01 33 00: Submittal procedures.
- B. Product Data: Indicate frame material, guage, configuration and finishes.
- C. Shop Drawings: See section 08 06 00. Indicate frame elevations, details of frame anchorage, reinforcements required, rough opening requirements, location of hardware embosses, and finishes. Detail each floor of the building separately.
- D. Samples: Submit [____] standard frame samples, illustrating factory finished frame colors.
- E. Manufacturer's Installation Instructions: Provide installation instructions for all products under this section.
- F. Manufacturer's Certificate of Warranty: (See Section 01 78 36) Provide manufacturer's standard warranty certificate stating material is warranted for a period of one year from date of building occupancy
- G. LEED Qualification

1. LEED Credit MR4.1, MR4.2: Post consumer and Pre consumer recycled material content

- 2. LEED Credit MR5.1: Location of manufacturer/proximity to project
- 3. EQc4.1: VOC MSDS sheet for paint materials

1.05 Quality Assurance

A. Quality Standards

1. Material free from defects in material and according to project specifications for pre-engineered opening systems

2. Proven durability of factory finishes allowing for bending and shaping of material after finish is applied

B. Fire Rated Frame Construction

1. Conform to ASTM E152, NFPA 252, UL 10B and 10C.

C. Installed Frame Assembly: Conform to NFPA 80

1. Use only installers familiar with installation of prefinished opening systems and applied casing frame installation

1.06 Delivery, Storage and Handling

- A. Section 01 60 00: Transport, handle, store, and protect products in a dry area off the ground.
- B. Accept frames on site in manufacturer's box packaging with identification labels intact. Inspect for damage.
- C. Do not open individual boxes until installation is to begin.

Part 2 - PRODUCTS

2.01 Acceptable Manufacturers

- A. Timely Industries, A Division of SDS Industries, Inc., 10241 Norris Avenue, Pacoima, CA, 91331-2292; Phone toll free: 800-247-6242; Fax: 818-492-3530. Web site: <u>www.timelyframes.com</u>.
- B. Frames: Provide interior frames shown on drawings and door schedule.
- C. Substitutions: Refer to Section 01 60 00

2.02 Frames

- A. Frame Material: Hot dipped galvanized steel, for interior frames in normal atmospheric exposures.
- B. Frame Material: Hot dipped galvanized steel for all frames used in the following locations:
 - 1. Exterior Locations
 - 2. Public and Private Restrooms
 - 3. Areas subject to corrosive chemicals or high humidity

4. Coastal locations for both interior and exterior applications exposed to salt air or salt spray within 10 miles of any ocean or salt water lake.

- C. Frame Throat Opening: As shown on plan details to suit finished wall thickness.
- D. Where shown, fire rated frames to have kerf formed into frame profile for installation of smoke gasket or weatherstrip material
- E. Frame Profile Unequal Rabbet profile, standard with manufacturer
 - 1. "S" Series, 0.9 mm (20 guage) thick, room interior frames
 - 2. "C" Series, 1.2 mm (18 guage) thick, non standard walls

3. "CK" Series, 1.2 mm (18 guage) thick, with kerf for door seal/gasket, fire rated, room entry, exterior locations

4. "AK" Series, 0.9 mm (20 guage) thick, with kerf for door seal/gasket, fire rated room entry, exterior locations – available as prime finish only (Specify only if using field applied finishes)

5. "DE" Series, 1.2mm (18 guage) thick, for cross corridor double egress application

- 6. "P" Series, 1.2mm (18 guage) thick, for Pocket door trim
- F. Side Light Frames: 1.2 mm (18 guage) Verify glass dimensions for fire rated sidelights and borrowed lights
- G. Casings

1. Provide Steel Casings formed to be applied to heat treated clips on frame face after frame is anchored to wall

2. Standard Steel - TA-8 with 6 mm (1/4 inch) reveal, on steel, stainless steel, and/or brass frames. Fit factory assembled units with MiterGard corner alignment clips. Provide TA-21(Floral design) or TA-22 (Saturn design) corner rosettes if shown.

3. Colonial Style Steel - TA-30 with 6 mm (1/4 inch) reveal. Provide manufacturer's standard TA-31N corner alignment clips. Factory Emboss TA-30 casing for application of regular arm closer and/or door guard mounting. Provide TA-33 (Floral design) or TA-34 (Saturn design) corner rosettes if shown

4. Wood (Provided by Others) - Refer to Section 06400 - Architectural Woodwork. Provide frames with nail holes and oval slots only.

2.03 Frame Reinforcement and Accessories

- A. Provide reinforcements shipped loose to project site for hardware application
 - 1. TA-10 Regular arm closers, casing mounted door guards and coordinators

2. TA-12 - Parallel arm closers, Rim Exit device strikes, other stop mounted surface hardware

3. TA-12K – For CK frame, Parallel arm closers, Rim Exit device strikes, other stop mounted surface hardware

4. TA-25 - Double acting spring hinges, continuous hinges, other surface mounted hardware on door rabbet or cased opening frame

5. Provide hinge reinforcement (TA-11) of 14 guage steel pierced to create depth of thread for hinge screws equal to or exceeding 7 guage steel.

- B. Weatherstrip/Smoke Gasket: TA-46 (QDS500) 90 minute rated gasket for kerfed frames. Provide for all CK Series frames with factory installed gasket. Provide manufacturer's standard colors to closely match frame color. (Custom colors not available on TA-46)
- C. Silencers: TA-5 vinyl, clear stick-on type. Silencers not required on Kerfed frames or frames schedule to receive stop mounted gasket or weatherstrip
- D. Glass Stops: TA-14 removable rolled steel, shape, butted ends. Pre-punch and countersink for flat head tek screws.
- E. Adjustable strikes: Emboss frames for TA-1 strike for cylindrical lock. Provide TA-1 strike in finish compatible with hardware finish. (ANSI 2-3/4" T strike supplied with cylindrical lock cannot be used with standard frame because of unique strike location and screw piercing method)
- F. Prepare frames for ASA 4-7/8" strikes where required. Provide minimum 1/4" depth of threads in factory tapped screw holes
- G. Installation fasteners (Provided by others)

1. Interior Frames: #6 Drywall type length sufficient to penetrate studs or structure at least $\frac{1}{2}$ ".

2. Exterior Frames: Drywall type, corrosion resistant coating, same as G.1 above

2.04 Fabrication

- A. Openings for single swing, pair, borrowed light and sidelight frames to be precut, notched and fabricated at the manufacturer's facility. For fire rated and exterior openings, provide kerf at stop for installation of smoke gasket or weatherstrip
- B. Provide minimum 14 guage hinge reinforcement plate tapped for machine screws supplied with hinges. Hinge plate to be mechanically attached to hinge emboss on frame

- C. Casing Clips: Fabricate frames with factory applied, heat treated clips to ensure no deflection in the clip upon application or removal of casing. Attachment clips may not be of same material as frame
- D. Provide notches, tabs and/or stops for positive alignment of frame parts at all corners
- E. Mullions to be notched as required to provide tight joints
- F. Provide manufacturer's standard mullion brackets for positive connection of frame and mullion parts
- G. Provide manufacturer's standard steel glass stop pre-cut to exact length. Fire rated glazed openings to have hole for installation screw within 2" of each end of stop piece
- H. Provide insert channel full width of borrowed lights installed on finish floor. Provide full width head channel for ceiling height units.
- I. Provide adequate structural support (by others) for ceiling insert channel for ceiling height frames
- J. Transoms bars fixed type with same profiles as jamb and head
- K. Attach approved mylar label to each fire-rated frame indicating fire rating details
- L. Primed frames to have 90 minute fire label embossed into frame in lieu of mylar label
- M. Factory install TA-46 smoke gasket on all prefinished, CK series frames. Install with factory mitered corners to ensure adequate seal and pleasing appearance

2.05 Finishing

- A. Frame Units: Prefinished with factory applied impact resistant, polyurethane baked enamel finish or optional electrostatic applied water based paint system
- B. Frames for high humidity areas to be hot dipped galvanized. See 2.02.B for specific locations
- C. Casing Finishes
 - 1. Steel: Prefinished with factory applied impact resistant, polyurethane baked enamel finish.
 - 2. Primer: Hot Dipped Galvanized with 2 coats of white prime paint
- D. Colors: (Select)
 - 1. Standard Colors: Browntone (SC101) or Western White (SC107).
 - 2. Premium Colors (Slight Additional Cost): Autumn Brown (SC102), Black (SC103), Alumatone (SC108), or Stone Gray (SC106).
 - 3. Designer Colors: Select from manufacturer's standard pre-matched custom colors
 - 4. Custom Colors: Color custom matched for project requirements
 - 5. High Definition White Primer for AK series frames only

Part 3 – EXECUTION

3.01 Examination

- A. Verify acceptability of existing conditions before starting work.
- B. Verify that opening sizes and wall thicknesses are within specified tolerances. Verify that all finished walls are in plane to ensure proper door alignment.

3.02 Installation

- A. Install frames in accordance with manufacturer's requirements.
- B. Anchor frames with screws located at every casing clip or every 11" as shown on manufacturer's instructions. Field verify quantity and location of fasteners prior to installing casing.
- C. Install prefinished frames near end of the project after wall painting and wall coverings.
- D. Install frames using qualified installers familiar with installation of prefinished drywall frames.
- E. Coordinate installation of glass and glazing in glazed units.
- F. Coordinate installation of frames with installation of hardware specified in Section 08 71 00 and doors in Section 08 21 00.
- G. Touch-up blemishes on finished frames with factory prepared touch up paint.

END OF SECTION

SECTION 08 1423 ALUMINUM CLAD WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Wood-framed aluminum-clad gliding patio doors

1.2 REFERENCES

A. General: Standards listed by reference form a part of this specification section. Standards listed are identified by issuing authority, abbreviation, designation number, title or other designation. Standards subsequently referenced in this Section are referred to by issuing authority abbreviation and standard designation.

B. American Architectural Manufacturers Association (AAMA):

1. AAMA 450 - Voluntary Performance Rating Method for Mulled Fenestration Assemblies.

2. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products.

 AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
 AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
 AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

6. NAFS - North American Fenestration Standard/Specification for windows, doors and skylights (AAMA/WDMA/CSA/101/I.S.2/A440).

C. U.S. Department of Justice: Americans with Disabilities Act (ADA).

D. Andersen E- Series Product Installation Guides.

E. ASTM International (ASTM):

1. ASTM C1036 - Standard Specification for Flat Glass.

2. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.

3. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

4. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

5. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.

6. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

7. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.
1.3 SUBMITTALS

A. Product Data: For each type of product required.

B. Shop Drawings: Showing methods of installation, plans, sections, elevations and details of walls, specified loads, flashings, vents, sealants, and interfaces with all materials not supplied by the patio door manufacturer, and identification of proposed component parts and finishes.

C. Samples: Selection and verification samples for finishes, colors and textures. Submit two complete sample sets of each type of material required.

D. Certificates: Signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.

E. Test and Evaluation Reports: Showing compliance with specified performance characteristics and physical properties.

F. Manufacturer's Instructions: Manufacturer installation, storage, and other instructions.

G. Qualification Statements: For manufacturer and installer.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Member in good standing of the Insulating Glass Certification Council (IGCC).

2. Hallmark Certified Manufacturer and member in good standing of the Window and Door Manufacturers Association (WDMA).

3. Member in good standing of U.S. Green Building Council.

4. U.S. ENERGY STAR Partner.

5. Capable of demonstrating an extended history of window and door design, production and innovation.

B. Installer Qualifications:

1. Minimum five years' experience in the commercial installation of products required for the Project.

2. Experience on at least five projects of similar size, type and complexity as the Project.

3. An entity utilizing workers competent in techniques required by manufacturer for product types and applications indicated.

1.7 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Deliver materials to Project in manufacturer's original unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials and accessories protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by manufacturer off ground, under cover and not exposed to weather and construction activities.

1.8 WARRANTY

A. Special Warranty: Manufacturer's transferrable, non-prorated limited warranty.

- 1. Warranty Period, Glass: 20 years.
- 2. Warranty Period, Non-Glass Parts: 10 years.

PART 2 PRODUCT

2.1 CLAD WOOD DOORS

A. General: Provide wood doors complying with the performance requirements indicated and tested according to NAFS.

B. Basis-of-Design Product: Subject to compliance with requirements provide Andersen Corporation: Andersen E-Series patio doors.

C. Substitution Limitations: Submit substitution request in accordance with Section 01 6000 - Substitution Procedures

2.2 MATERIALS

A. Construction:

1. Cladding: Extruded aluminum, minimum thickness 0.050 inch (1.27 mm).

Stiles and Rails: Preservative treated (WDMA I.S.4) laminated veneer lumber (LVL) with wood veneer, kiln dried and suitable for stain or painted finish on interior.
 Interior Exposed Frame: Preservative treated (WDMA I.S.4) lumber, kiln dried and suitable for stain or painted finish.

B. Wood Species: Pine

C. Interior Finish:

- 1. Painted: Factory-applied before assembly. Color as selected by Architect and Owner
- D. Exterior Finish: Colors to match windows

1. Painted Frame: Factory-applied baked-on silicone polyester enamel, in compliance with [AAMA 2604] [AAMA 2605] color as selected from manufacturer's standard colors of no less than 50 option

2. Painted Panel: Factory-applied baked-on silicone polyester enamel, in compliance with [AAMA 2604] [AAMA 2605] [color as selected from manufacturer's standard colors of no less than 50 options

2.3 GLIDING PATIO DOOR.

A. Patio Door Type and Performance Requirements: Gliding patio door with stationary panel(s) and sliding panel(s) on adjustable rollers

1. Two-Panel Gliding Patio Door, Performance Class and Grade, Non-Impact-Resistant: LC-PG30 (size indicated on drawings).

B. Gliding Patio Door Weatherstrip Type and Material:

- 1. Frame: HR Urethane Foam Core with M5 Liner.
- 2. Panel: HR Urethane Foam Core with M5 Liner.
- C. Installation Flange: Extruded aluminum
- D. Hardware:

1. Gliding Panel Latch Type and Material: Single-actuation, two-point locking system, galvanized steel and engineered polymer components.

2. Rollers and Guides Type and Material: Dual stainless steel ball bearing rollers and roller track with stainless steel cap.

3. Patio Door Handle Designation and Finish: Yuma, Distressed Nickel.

11. Gliding Patio Door Auxiliary Foot Lock Type and Finish: Foot-operated device

designed to secure sliding panel in track, finish to match door handle.

12. Gliding Patio Door Lock Type and Finish: Unkeyed exterior, finish to match handle.

- E. Insect Screens:
 - 1. Type: Top-hung gliding insect screen.
 - a. Frame Material: Aluminum.
 - b. Painted Finish and Color: Match patio door frame
 - c. Insect Screen Material: Fiberglass mesh
- F. Exterior Trim and Accessories:
 - 3. Type: As indicated
 - 4. Material: Factory-applied extruded aluminum with corner keys.
 - 5. Finish and Color: Match doors

2.4 NON-IMPACT-RESISTANT GLAZING

- A: Thermal Transmission (U-Factor), NFRC 100:
 - 3. Gliding: [0.31 without grilles]
- B. Solar Heat Gain Coefficient (SHGC), NFRC 200:
 - 3. Gliding: [0.32 without grilles]
- C. Visible Light Transmittance (VLT), NFRC 200:
 - 3. Gliding: [0.56 without grilles]

D. Sound Transmission Class (STC)/Outdoor Indoor Transmission Classification (OITC), ASTM E90:

5. Gliding: [29/24] [30/28 with unbalanced glass] < Insert STC/OITC value>.

E. Glass Units: Provide insulating glass units certified through Insulating Glass Certification Council as conforming to the requirements of IGCC and ASTM E2190

- 1. Manufacturer Designation: Andersen High-Performance Low-E4 Glass.
- 2. Glazing Configuration: [Dual-pane]
- 3. Tint: [None].

4. Seal and Spacer Type: Dual sealed insulating glass units with polyisobutylene primary seal, silicone secondary seal and stainless steel spacers.

- 5. Glass Type: Fully tempered glass, ASTM C1048
- 6. Opacity: None.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that all substrate conditions are suitable for installation in compliance with manufacturer's recommendations.

B. Do not begin installation until substrates have been properly prepared and any conditions not in compliance with manufacturer's recommendations have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's product recommendations, including but not limited to the Andersen Unit Installation Guide, installation information in product literature and on product packaging. Comply with Drawings [and Shop Drawings] for installing patio doors, hardware, accessories, and other components.

B. Install patio doors plumb, level and square. Anchor patio doors securely to structure in correct orientation to flashing and adjacent construction as indicated. Comply with product installation instructions for proper flashing integration into wall system. Install patio doors so as to drain water penetration to the exterior.

C. Adjust sliding patio door, insect screens, hardware and accessories as applicable for correct fit. Adjust weatherstrip for smooth operation and weather-tight closure.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: If requested by Owner, provide manufacturer's field service consisting of product use recommendations and periodic site visits for observation of product installation in accordance with manufacturer's recommendations.

B. Field Testing: Provide field testing of installed units.

- 1. Test units in compliance with AAMA 502.
- 2. Use test equipment calibrated according to ASTM E1105.

3.4 CLEANING

A. Remove protective films and non-permanent labels prior to 90 days after installation.

B. Remove excess sealant, soiling, dirt and other substances. Clean patio door frame and glass surfaces. Avoid damaging coatings and finishes.

C. Touch-up, repair or replace glass or other patio door components broken, scratched or damaged during construction prior to Substantial Completion.

D. Remove and lawfully dispose of construction debris from Project site.

3.5 PROTECTION

A. Protect installed patio doors and finish surfaces from damage during construction until completion of Project and acceptance by Owner.

END OF SECTION

FLUSH WOOD DOORS SECTION 08 2100

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Wood doors with factory finish.
- 1.2 RELATED SECTIONS
 - A. SECTION 08 7100 FINISH HARDWARE.
 - B. SECTION 07 9000 JOINT SEALERS.

1.3 SUBMITTALS

- A. Submit Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, identify cutouts for glazing and louvers.
- B. Submit Schedule: Indicate doors using same reference numbers for details and openings as those on contract drawings.
- C. Submit Product Data: Indicate door core materials and construction; veneer species, type and characteristics; factory machining criteria, factory finishing criteria.
- D. Submit Samples: Three (3) samples of door veneer, 3 x 3 inch in size.

1.4 INSTITUTE STANDARDS

A. Perform work in accordance with AWI Quality Standard Section 1300, Premium Grade, and NWWDA Quality Standard I. S. 1.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 10 years documented experience.

1.6 REGULATORY REQUIREMENTS

- A. Fire Door Construction: Conform to UL 10B.
- B. Installed.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials in accordance with manufacturer's recommendations, in original sealed containers, a minimum of four inches above grade, under cover, and protect from physical damage and effects of weather until required for use or installation.
- B. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges if stored more than one week. Break seal on-site to permit ventilation.

1.8 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings and instructed by the manufacturer.
- 1.9 WARRANTY

- A. Provide manufacturer's Life of Installation warranty for Interior Doors.
- B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction.

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
 - A. Ampco
 - B. Algoma Hardwoods.
 - C. Eggers Industries.
 - D. Graham.
 - E. Weyerhaeuser Commercial Door Division.
 - F. VT Industries
 - G. An Approved Equal (see specification section 00040.1.3 Products or Equal)
- 2.2 DOOR CONSTRUCTION
 - A. Flush Solid Core Wood Doors: 1-3/4" thick
 - 1. Particle Wood Core.
 - 2. Stiles; 2 ½"
 - 3. TopRail; 5", Bottom Rail; 10"
 - 4. Lock Blocks; 5" x 20", solid wood.
 - 5. Frame: Wood.
 - 7. Furnish & install hinges per hardware specification and manufacturer's recommendations.

2.3 FACE VENEER

- A. Grade : Premium.
- B. Construction: 3 ply, 1/8 inch thick.
- C. Veneer Grain Matching: Balance, End or Slip.
- D. Stain: Owner will select from manufacturers full range of stains, colors and finishes.
- E. Finish: Factory finish a minimum of two (2) coats of clear varnish or polyurethane coating.
- F. Veneer Cut and Species: ROTARY SLICED MAPLE.

2.4 ACCESSORIES

- A. Facing Adhesive: Type I waterproof.
- B. Glazing Stops: Wood, of same species as door facing, with metal clips for rated doors, mitered corners; prepared for countersunk style tamper proof screws.

2.5 FABRICATION

A. Fabricate non-rated doors in accordance with AWI Quality Standards requirements.

- B. Fabricate fire rated doors in accordance with AWI Quality Standards and to UL and Warnock-Hersey requirements. Attach fire rating label to door.
- C. Provide lock blocks at lock edge and top of door for closer for hardware reinforcement only at mineral core doors.
- D. Vertical Exposed Edge of Stiles: Of same species as veneer facing for paint or transparent finish.
- E. Fit door edge trim to edge of stiles after applying veneer facing.
- F. Bond edge banding to cores.
- G. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware. Provide solid blocking for through bolted hardware.
- H. Factory pre-fit or job fit doors for frame opening dimensions identified on shop drawings. Contractor's option for either is acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that opening sizes and tolerances are acceptable.
- B. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.
- B. Trim non-rated door width by cutting equally on both jamb edges.
- C. Trim door height by cutting bottom edges to a maximum of 3/4 inch.
- D. Pilot drill screw and bolt holes.
- E. Machine cut for hardware. Core for locksets and cylinders.
- F. Coordinate installation of doors with installation of frames and hardware.
- G. Coordinate installation of glass and glazing.
- H. Install door louvers, plumb and level.
- I. Conform to AWI requirements for fit and clearances tolerances.
- J. Conform to AWI Section 1300 requirements for maximum diagonal distortion.
- K. Adjust door for smooth and balanced door movement.

END OF SECTION 08 2100

SECTION 08 4313

ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weatherstripping.
- D. Door hardware.

1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.

1.03 REFERENCE STANDARDS

- A. AAMA CW-10 Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- B. AAMA 609 & 610 Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- C. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum; 2012.
- D. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2013.
- E. ASTM B221M Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2013.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
- D. Samples: Submit two samples 6x6 inches in size illustrating finished aluminum surface, glass, glazing materials.
- E. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
- F. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at the State in which the Project is located.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.08 WARRANTY

- A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after the Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Aluminum-Framed Storefront and Doors:
 - 1. Kawneer North America; Kawneer Trifab 451UT, Basis for design: www.kawneer.com.
 - 2. Substitutions: See Section 01 6000 Product Requirements.

2.02 STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Glazing Rabbet: For 1 inch insulating glazing.
 - 2. Glazing Position: Centered (front to back).
 - 3. Finish: Superior performing organic coatings.
 - a. Factory finish all surfaces that will be exposed in completed assemblies.
 - b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
 - 4. Finish Color: As selected by Architect from manufacturer's standard line.
 - 5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
 - 6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
 - 7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
 - 8. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
 - 9. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
 - 10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

2.03 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
 - 1. Glazing Stops: Flush.
 - 2. Cross-Section: As indicated on drawings. Provide historical aluminum trim profiles as indicated on drawings.
- B. Swing Doors: Glazed aluminum.
 - 1. Thickness: 1-3/4 inches.
 - 2. Top Rail: 4 inches wide.
 - 3. Vertical Stiles: 4-1/2 inches wide.
 - 4. Bottom Rail: 10 inches wide.
 - 5. Glazing Stops: Square.
 - 6. Finish: Same as storefront.

2.04 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.
- C. Fasteners: Galvanized steel.
- D. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.05 FINISHES

- A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.
- B. Color: As selected by Architect from manufacturer's standard range.

2.06 HARDWARE

- A. For each door, include weatherstripping, sill sweep strip, and threshold.
- B. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- C. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
- D. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.
- E. Hinges: Butt type, swing clear; top and bottom.
- F. Push/Pull Set: Standard configuration push/pull handles.
- G. Exit Devices: Panic type.
- H. Door Closers: Concealed overhead.
- I. Locks: Dead latch with thumbturn inside; keyed cylinder outside.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Install hardware using templates provided.
- K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 1/16 inches per 10 ft, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for independent testing and inspection requirements. Inspection will monitor quality of installation and glazing.

3.05 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.06 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.07 PROTECTION

A. Protect installed products from damage during subsequent construction.

END OF SECTION

SECTION 08 5213 ALUMINUM CLAD WOOD WINDOWS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Wood-framed, aluminum-clad windows of the following types: gliding and fixed

1.2 REFERENCES

A. General: Standards listed by reference form a part of this specification section. Standards listed are identified by issuing authority, abbreviation, designation number, title or other designation. Standards subsequently referenced in this Section are referred to by issuing authority abbreviation and standard designation.

B. American Architectural Manufacturers Association (AAMA):

1. AAMA 450 - Voluntary Performance Rating Method for Mulled Fenestration Assemblies.

2. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products.

3. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

4. AAMA 902 - Voluntary Specification for Sash Balances.

5. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
6. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

7. NAFS - North American Fenestration Standard/Specification for windows, doors and skylights.

C. Andersen E-Series Product Installation Guides.

D. ASTM International (ASTM):

1. ASTM C1036 - Standard Specification for Flat Glass.

2. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.

3. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

4. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

5. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.

6. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

7. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.

8. ASTM F2090 - Standard Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms.

M. Window and Door Manufacturers Association (WDMA):

1. WDMA Hallmark Certification Program for Manufacturers.

2. WDMA I.S. 4 - Industry Specification for Preservative Treatment for Millwork.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meetings: Conduct pre-installation meeting to clarify Project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance Requirements:

1. Comply with requirements of NAFS.

1.5 SUBMITTALS

A. Product Data: For each type of product required.

B. Shop Drawings: Showing methods of installation, plans, sections, elevations and details of walls, specified loads, flashings, vents, sealants, and interfaces with all materials not supplied by the window manufacturer, and identification of proposed component parts and finishes.

C. Samples: Selection and verification samples for finishes, colors and textures. Submit two complete sample sets of each type of material required.

D. Certificates: Signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.

E. Test and Evaluation Reports: Showing compliance with specified performance characteristics and physical properties.

F. Manufacturer Instructions: Manufacturer installation, storage, and other instructions.

G. Qualification Statements: For manufacturer and installer.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Member in good standing of the Insulating Glass Certification Council (IGCC).

2. Hallmark Certified Manufacturer and member in good standing of the Window and Door Manufacturers Association (WDMA).

3. Capable of demonstrating an extended history of window and door design, production and innovation.

B. Installer Qualifications:

1. Minimum five years' experience in the commercial installation of products required for the Project.

Experience on at least five projects of similar size, type and complexity as the Project.
 An entity utilizing workers competent in techniques required by manufacturer for product types and applications indicated.

1.7 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Deliver materials to Project in manufacturer's original unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials and accessories protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by manufacturer off ground, under cover and not exposed to weather and construction activities.

1.8 WARRANTY

A. Special Warranty: Manufacturer's transferrable, non-prorated limited warranty.

- 1. Warranty Period, Glass: 20 years.
- 2. Warranty Period, Non-Glass Parts: 10 years.

B. Special Warranty: Installer's standard form in which installer agrees to repair or replace windows that fail due to poor workmanship or faulty installation within the specified warranty period.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 PRODUCT

2.1 ALUMINUM-CLAD WOOD WINDOWS

A. General: Provide windows complying with the performance requirements indicated and tested according to NAFS.

B. Basis-of-Design Product: Subject to compliance with requirements provide Andersen Corporation: Andersen E-Series windows.

C. Substitution Limitations: Submit substitution request in accordance with Section 01 6000 - "Substitution Procedures"

2.2 MATERIALS

A. Construction:

- 1. Cladding: Extruded aluminum, minimum thickness 0.050 inch (1.27 mm).
- 2. Frame: Preservative treated laminated veneer lumber.

3. Interior Exposed Frame: Preservative treated solid lumber, kiln dried and suitable for stain or painted finish.

4. Sash: Preservative treated solid lumber, kiln dried and suitable for stain or painted finish.

- B. Wood Species: Pine
- C. Interior Finish:

1. Painted: Factory-applied before assembly, Color as selected by Architect and Owner from manufacturer's standard colors.

D. Exterior Finish:

 Painted Frame: Factory-applied baked-on silicone polyester enamel, in compliance with color as selected from manufacturer's standard colors of no less than 50 options
 Painted Sash: Factory-applied baked-on silicone polyester enamel, in compliance with color as selected from manufacturer's standard colors of no less than 50 options

2.3 WINDOW

A. Window Type and Performance Requirements: Gliding

1. Gliding Performance Class CW and Grade, Non-Impact-Resistant: [PG30]

B. Weatherstrip:

1. Type and Material for Hung or Gliding: Three fins and pile, polypropylene.

- C. Installation Flange Type: None
- D. Hardware:
 - 1. Sash Lock Mechanism Type and Material: Flush mounted die-cast zinc.
- E. Insect Screens:

5. Type: Conventional half.

- a. Frame Material: Aluminum.
- b. Painted Finish and Color: [Match window frame]
- c. Insect Screen Material: [Fiberglass mesh]

F. Exterior Trim and Accessories:

- 4. Type: [As indicated on drawings
- 6. Finish and Color: Match windows

2.4 NON-IMPACT-RESISTANT GLAZING

A: Thermal Transmission (U-Factor), NFRC 100: 1. Gliding: [0.32 without grilles]

- B. Solar Heat Gain Coefficient (SHGC), NFRC 200: 1. Gliding: [0.31 without grilles]
- C. Visible Light Transmittance (VLT), NFRC 200:
 - 1. Gliding: [0.53 without grilles]

E. Glass Units: Provide insulating glass units certified through [Insulating Glass Certification Council as conforming to the requirements of IGCC and ASTM E2190]

- 1. Manufacturer Designation: Andersen High-Performance Low-E4 Glass.
- 2. Glazing Configuration: Dual-pane
- 3. Tint: None.

4. Seal and Spacer Type: Dual sealed insulating glass units with polyisobutylene primary seal, silicone secondary seal and stainless steel spacers.

- 5. Glass Type: [Annealed glass, ASTM C1036]
- 6. Opacity: None

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that all substrate conditions are suitable for installation in compliance with manufacturer's recommendations.

B. Do not begin installation until substrates have been properly prepared and any conditions not in compliance with manufacturer's recommendations have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's product recommendations, including but not limited to the Andersen Unit Installation Guide, installation information in product literature and on product packaging. Comply with Drawings [and Shop Drawings] for installing windows, hardware, accessories, and other components.

B. Install windows plumb, level and square. Anchor windows securely to structure in correct orientation to flashing and adjacent construction as indicated. Comply with product installation instructions for proper flashing integration into wall system. Install windows so as to drain water penetration to the exterior.

C. Adjust sashes, insect screens, ventilators, hardware and accessories as applicable for correct fit. Adjust weatherstrip for smooth operation and weather-tight closure.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: If requested by Owner, provide manufacturer's field service consisting of product use recommendations and periodic site visits for observation of product installation in accordance with manufacturer's recommendations.

B. Field Testing: Provide field testing of installed units.

- 1. Test units in compliance with AAMA 502.
- 2. Use test equipment calibrated according to ASTM E1105.

3.4 CLEANING

A. Remove protective films and non-permanent labels prior to 90 days after installation.

B. Remove excess sealant, soiling, dirt and other substances. Clean window frame and glass surfaces. Avoid damaging coatings and finishes.

C. Touch-up, repair or replace glass or other window components broken, scratched or damaged during construction prior to Substantial Completion.

D. Remove and lawfully dispose of construction debris from Project site.

3.5 PROTECTION

A. Protect installed windows and finish surfaces from damage during construction until completion of Project and acceptance by Owner.

END OF SECTION

FINISH HARDWARE SECTION 08710

PART 1 GENERAL

- 1.1 SUMMARY:
 - A. Section Includes: Finish hardware except as otherwise specified.
 - B. Related Sections:
 - 1. Section 06200 Finish Carpentry: Installation of finish hardware.
 - 2. Section 08210 Wood Doors.
 - C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.
 - 1. Windows
 - 2. Cabinets of all kinds, including open wall shelving and locks.
 - 3. Signs, except as noted.
 - 4. Toilet accessories of all kinds including grab bars.

1.2 SUBMITTALS:

- A. 1. Items listed with no substitute manufactures are to match existing.
- B. SUBMITTALS: Submit schedule at earliest possible date prior to delivery of hardware. Organize schedule into "Hardware Sets" with an index of doors and heading, indicating complete designations of every item required for each door or opening. Include the following information:
 - 1. Type, style, function, size, quantity and finish of each hardware item.
 - 2. Name, part number and manufacturer of each item.
 - 3. Fastenings and other pertinent information.
 - 4. Location of hardware set cross referenced to indications on drawings both on floor plans and in door schedule.
 - 5. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 6. Mounting locations for hardware.
 - 7. Door and frame sizes and materials.
 - 8. Submit manufacture's technical data and installation instructions for the electronic hardware.
 - 9. Catalog cuts.
- C. Templates: Where required, furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware.

1.3 QUALITY ASSURANCE:

- A. Qualifications:
 - 1. Obtain each kind of hardware (latch and locksets, exit devices, hinges, and closers) from only one manufacturer, although several may be indicated as offering products complying with requirements.
 - 2. Hardware supplier shall be a direct factory contract supplier who has in his employment a certified architectural hardware consultant (AHC) who is available at all reasonable times during the course of the Work, and for project hardware consultation to the Owner, Architect, and Contractor.
- B. Schedule Designations: Except as otherwise indicated, the use of one manufacturer's numeric designation system in schedules does not imply that another manufacturer's products will not be acceptable, unless they are not equal in design, size, weight, finish function, or other quality of significance.
- C. Exit Doors: Operable at all times from the inside without the use of a key or any special knowledge or effort.

- 1.4 DELIVERY, STORAGE, AND HANDLING:
 - A. Acceptance at the Site: Individually package each unit of finish hardware complete with proper fastening and appurtenances, clearly marked on the outside to indicate contents and specific locations in the Work.
 - B. Deliver packaged hardware items at the times and to the locations (shop or field) for installation, as directed by the Contractor.

1.5 PROJECT CONDITIONS:

- A. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
- B. Upon request, check the Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.6 WARRANTY:

- A. Provide guarantee from hardware supplier as follows:
 - 1. Closers: Ten years: except electronic closers: Two years.
 - 2. Exit Devices & Locksets: Three years
 - 3. All other Hardware: Two years.

PART 2PRODUCTS

- 2.1 MANUFACTURERS: (Replace "Best" with Kwikset" in the following paragraphs)
 - A. "Best" is listed as a manufacturer to establish level of quality and function of hardware only. IF "Best" hardware is not compatible with the owner's keying system. Replace any reference to "Best" with "Schlage" or other comparable door hardware manufacturers subject to approval by the owner and architect.
 - B. Approval of manufacturers other than those listed shall be in accordance with paragraph 1.02 A.

<u>ltem</u> :	Manufacturer:	Approved:	<u>Approved</u>
Hinges	Stanley	Hager	McKinney
LOCKS	Falcon	Schlage	
Cylinders	Best	Schlage	
Exit Devices	Precision-Apex	Sargent	Corbin Russwin
Closers	Ryobi-D-4550/1	Sargent	LCN
Ball Catch	Stanley	Hager	Rockwood
Stops	Stanley	Rockwood	Hager
Kickplates	Rockwood	Hager	Trimco
Thresholds	Hager	Zero	Pemko
Weatherstripping	Hager	Zero	Pemko

- C. Furnish all items of hardware required to complete the work in accordance with specifications and plans.
- D. Carefully inspect Project for the extent of the finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware furnish finish hardware to specification.
- 2.2 MATERIALS: (Replace "Best" with "Kwikset" in the following paragraphs)

- A. Locksets: All locksets and latchsets shall be extra-heavy-duty lever cylindrical with Best 7pin interchangeable core. Lockset and Cores to be of the same manufacturer to maintain complete lockset warranty. Locks to have solid shank with no opening for access to keyed lever keeper. Keyed Lever to be protected by means of a break-away mechanism to prevent forced entry, when excessive torque is applied, a replaceable part will shear. Lock chassis must be through-bolted (outside of the lock chassis prep) to prevent rotation of chassis after installation. Lock manufacturer shall provide a three-year warranty, in writing, to the Owner, along with three copies of the lock service manual. Strikes shall be 16 gauge curved brass, bronze or stainless steel with a 1" deep box construction, and have sufficient length to clear trim and protect clothing.
 - 1. Grade 1 Cylindrical Locks shall have minimum 9/16 throw. All deadbolts shall have 1-inch minimum throw.
 - 2. Comply with requirements of local security ordinances.
 - Lock Series and Design: Exterior -- Best 93K 15D Trim; Interior -- 73KC 15D Trim; Deadbolts – Best 83T-K. Cylinders/Cores: Best PEAKS Patented 7-Pin
- B. Hinges: Outswinging exterior doors shall have non removable pin hinges. All hinge open widths shall be minimum, but of sufficient size to permit door to swing 180. Furnish hinges with five knuckles and flush bearing.
 - 1. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
 - 2. Provide hinges as listed in schedule.
 - 3. Hinges on pre-hung doors can be door manufacturers premium hinges.
- C. Exit Devices: Furnish all sets at wood doors with sex bolts unless otherwise specified. Lever handle trim shall match locksets. All touch bar type devices shall have deadlocking latchbolt, stainless steel touchpads or vinyl covered pads and be non-handed. The unlatching force shall not exceed 15 pounds when applied in the direction of exit travel.
- D. Surface Door Closers: Full rack and pinion type with removable non-ferrous cover. Provide sex bolts at all wood doors. Place closers inside building, stairs, and rooms. Closers shall be non-handed, non-sized and adjustable.
 - 1. Provide multi-size 1 through 6 at all doors rated or not.
 - 2. Flush transom offset brackets shall be used where parallel arm closers are listed for doors with fixed panels over.
 - 3. Drop brackets are required at narrow head rails.
 - 4. Set exterior doors closers to have 8.5 lbs maximum pressure to open, interior non-rated at 5 lbs, rated openings at 12 lbs.
- E. Kickplates: Provide with four beveled edges, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish screws to match finish.
- F. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.
- G. Screws: All exposed screws shall be Phillips head.
- H. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occur.
- 2.3 FINISH:
 - A. Generally to be BHMA 626 Satin Chrome. (to match existing 26D)
 - 1. Protection Plates, Push, Pulls shall be BHMA 630.

- B. Spray door closers to match other hardware, unless otherwise noted.
- C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYING REQUIREMENTS:

- A. The general contractor is to incorporate all new locks into the owner's existing keying system. Coordinate with the owner before shop drawing submittal.
- B. Provide construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished on the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished by the General Contractor prior to occupancy.
- C. All cylinders shall be Best 7-pin, interchangeable core Patented Key System (PEAKS).
- D. Permanent keys and cores shall be stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."
- E. Grand Master keys, Master keys and other Security keys shall be transmitted to the Owner by Registered Mail, return receipt requested.
- F. Furnish keys in the following quantities:
 - 1 each Grand Master keys
 - 4 each Master keys
 - 2 each Change keys each keyed core
 - 9 each Construction Master keys
 - 1 each Control keys
- G. The General Contractor will make arrangements and pay for best locks to provide & install permanent cores. The construction cores are for temporary use and shall be removed upon installation of permanent cores.
- H. Keying schedule: Submit three copies of separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

PART 3EXECUTION

- 3.1 HARDWARE LOCATIONS:
 - A. Hinges:
 - 1. Bottom Hinge: 10 inches from door bottom to bottom of hinge.
 - 2. Top Hinge: 5 inches from door top to top of hinge.
 - 3. Center Hinge: Center between top and bottom hinge.
 - 4. Extra Hinge: 6 inches from bottom of top hinge to top of extra hinge.
 - B. Lock: 38 inches from finished floor to center of lever or knob.
 - C. Push Bar: 44 inches from bottom of door to center of bar.
 - D. Push Plate: 44 inches from bottom of door to center of plate.
 - E. Pull Plate: 42 inches from bottom of door to center of pull.
 - F. Exit Device: 39-13/16 inches from finished floor to center of pad.
 - G. Deadlock Strike: 44 inches from floor, centered.
- 3.2 INSTALLATION:

- A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- B. Installation shall conform to local governing agency security ordinance.

3.3 ADJUSTING:

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly.
- B. Inspection: Hardware supplier shall inspect all hardware furnished within 10 days of contractor's request and include with his guarantee a statement that this has been accomplished. Inspector or Contractor shall sign off the hardware as being complete and correctly installed and adjusted. Further corrections of defective material shall be the responsibility of his representative.
- 3.4 SCHEDULE OF FINISH HARDWARE:
 - A. Legend of listed manufacturers:

ST	Stanley	BE	Best	PR	Precision
RY	Ryobi	AB	ABH	RO	Rockwood
HA	Hager				

- B. The items listed in the following "Schedule of Finish Hardware" shall conform throughout to the requirements of the foregoing specification. The last column of letters in the Hardware Schedule refers to the manufacturer abbreviation listed above.
- C. The Door Schedule on the Drawings indicates which Hardware Set is used with door.
- D. "Best" is listed as a manufacturer to establish level of quality and function of hardware only. "Best Hardware is not compatible with the owner's keying system. Replace any reference to "Best" with "Schlage" or other comparable door hardware manufacturers subject to approval by the owner and architect.

<u></u>	EXTERIOR	INTERIOR	
Locksets	Grade 1	Grade 2	Manufacture
Passage Sets	93K-N-15D	73KC-N-15D	BE
Privacy Sets	93K-L-15D	73KC-L-15D	BE
Dummy Trim 1 Side	93K-1DT-15D	73KC-1DT-15D	BE
Keyed Entry Locks	93K-AB-15D	73KC-A-15D	BE
Deadbolt Cylinders – Rim 1E-2 Cylinders – Rim 1E-72	83T-K BE BE		BE
Hinges Interior	F179 3 ½ x 3 ½ 2	6D	ST
Hinges – Exterior High Use	FBB199 4 ½ x 4 ½	∕₂ 32D	ST
Hinges – Exterior Standard Use	FBB191 4 ½ x 4 ½	∕₂ 32D	ST
Hinges – Interior Spring Hinges	2060R 4½ x4½	2 US26D	ST
Rim Panic Device	2108-3900A		PR
Closers	D-4550		RY
Ball Catch	310360700		ST
Weather-stripping	803SA		HA

PRODUCT NUMBERS

Door Stop – Wall Door Stop – Floor Thresholds Kickplates	804011 575415 413SA K1050		ST ST HA RO
	HARDWARE	SETS	
Description		Number	Manufacturer
<u>HW-01 (Bathrooms/Bedrooms)</u> 3 EACH HINGES 1 EACH PRIVACY SET 3 EACH SILENCERS STOP		F179 3 ½" X 3 ½" 20 7KC-L-15D-626	6D ST BE
HW-02 (Single Door Closets) 3 EACH HINGE 1 EACH DUMMY LEVER 1 EACH BALL CATCH 3 EACH SILENCERS STOP		F179 3 ½" X 3 ½" 20 73KC – 1 DT-15D 310360700	6D ST ST
<u>HW-03 (Pair closet doors)</u> 6 HINGES 2 BALL CATCH 2 DUMMY HANDLES 2 WALL STOP		F179 3 ½" X 3 ½" 20 310360700 73KC – 1 DT-15D	6D ST ST
HW-04 (Apartment Entrance Doors) 3 EACH SPRING HINGES KEYED ENTRY LOCKSET 1 VIEWER W/KNOCKER OVERSIZED KICKPLATE	-	2060R 4 ½ X 4 ½ 73KC-A-15D 614V 626	ST BE
<u>HW-05 (Office)</u> 3 HINGES 1 LOCKSET 1 CLOSER 1 WALL STOP 1 KICK PLATE		MPB79 4.5 X 4.5 U 4607LN AU 626 2701 689 409 US26D K1050 8"X 2" LDW	S26D US26D
HW-06 (Storefront Exit) 1 CONTINUOUS HINGE 1 EXIT DEVICE 1 CLOSER 1 DROP DOWN PLATE 1 PULL 1 CYLINDER CORE – BY OWNER 1 CYLINDER HOUSING ONLY K680 X	32/35 KT1	MCK-12HD CL 6220 630 5801 689 BF157 US32D	
WEATHER STRIPPING - BY STOREFF THRESHOLD - BY STOREFRONT MAN	RONT MANUFAC	CTURER	

HW-07 (Maintenance)		
6 HINGES	MPB79 4.5 X 4.5 US26D	
1 LOCKSET	4605LN AU 626	
2 CLOSER	2701 689	
2 WALL STOP	409 US26D	
2 FLUSH BOLT	555 US26D	
HW-08(Existing Storefront Exit)	0000 000	
1 EXIT DEVICE	6220 630	
HW-09 (Boiler Room Exterior Door)		
6 HINGES – EXTERIOR STANDARD USE	FBB191 4 ½ x 4 ½ 32D	ST
1 KEYED ENTRY LOCKSET	93K-AB-15D	BE
1 FLUSH BOLT	555 US26D	
WEATHER-STRIPPING	803SA	HA
HW-10 (Penthouse access)		
3 HINGES – EXTERIOR STANDARD USE	FBB191 4 ½ x 4 ½ 32D	ST
1 KEYED ENTRY LOCKSET	93K-AB-15D	BE
1 FLUSH BOLT	555 US26D	
WEATHER-STRIPPING	803SA	HA

END OF SECTION 08 7100

GLAZING

SECTION 08 8000

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Glass.
- B. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 9200 Joint Sealants
- B. Section 08 4313 Aluminum Framed Storefronts.
- C. Section 08 5213 Aluminum Clad Wood Windows. Glass for Aluminum clad wood windows is specified in Section 08 5213
- D. Coordinate with other prime and sub-contractors to assure proper incorporation of and provision for items to be furnished or installed by them.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 Safety Standard for Architectural Glazing Materials; current edition.
- B. ANSI Z97.1 American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2004.
- C. ASTM C 864 Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005.
- D. ASTM C 920 Standard Specification for Elastomeric Joint Sealants; 2005.
- E. ASTM C 1036 Standard Specification for Flat Glass; 2006.
- F. ASTM C 1048 Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass; 2004.
- G. ASTM C 1172 Standard Specification for Laminated Architectural Flat Glass; 2003.
- H. ASTM C 1193 Standard Guide for Use of Joint Sealants; 2005a.
- I. ASTM E 773 Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units; 2001.
- J. ASTM E 774 Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units; 1997.
- K. ASTM E 2190 Standard Specification for Insulating Glass Unit Performance and Evaluation; 2002.
- L. GANA (GM) GANA Glazing Manual; Glass Association of North America; 2004.
- M. GANA (SM) FGMA Sealant Manual; Glass Association of North America; 1990.
- N. GANA (LGDG) Laminated Glazing Reference Manual; Glass Association of North America; 2006.
- O. SIGMA TM-3000 Glazing Guidelines for Sealed Insulating Glass Units; Sealed Insulating Glass Manufacturers Association; 2004.

1.04 PERFORMANCE REQUIREMENTS

A. Provide glass and glazing materials for continuity of building enclosure vapor retarder and air barrier:

- 1. In conjunction with vapor retarder and joint sealer materials described in other sections.
- 2. To maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.

1.05 SUBMITTALS

- A. See Section 01 3300 Administrative Requirements, for submittal procedures.
- B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- D. Samples: Submit two samples, 12" x 12" in size, of glass units, showing coloration.
- E. Samples: Submit 12" long bead of glazing sealant or gasket exposed to view, of color required as selected by Architect from manufacturer's full range of colors.
- F. Certificates: Certify that products meet or exceed specified requirements.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA Glazing Manual, FGMA Sealant Manual, and GANA Laminated Glass Design Guide for glazing installation methods.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum Five (5) years documented experience.

1.07 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 50 degrees F.

1.08 WARRANTY

- A. See Section 01700 Contract Closeout, for additional warranty requirements.
- B. Sealed Insulating Glass Units: Provide a five (5) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

1.09 MAINTENANCE PRODUCTS

A. Provide Two (2) of each glass size and each glass type, and insulated glass units.

PART 2 PRODUCTS

2.01 GLASS MATERIALS

- A. Float Glass Manufacturers:
 - 1. PPG Industries, Inc: www.ppg.com. PPG is specified for the purpose of establishing standards of type and quality for estimating purposes. Only an approved equal will be considered as a substitution.
 - 2. Visteon Glass Systems: www.visteon.com/floatglass.
 - 3. Pilkington Building Products North America:www.pilkington.com.
 - 4. Substitutions: Refer to Section 01600 Product Requirements.
- B. Clear Float Glass (Type Uncoated): Clear, fully tempered, for Aluminum Storefront doors and sidelites.
 - 1. Comply with ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality q3 (glazing select.
 - 2. Complyply with ASTM C 1048. 3. 6 mm minimum thick.

2.02 SEALED INSULATING GLASS UNITS

- A. Manufacturers:
 - 1. Any of the manufacturers specified for float glass.
 - 2. Substitutions: Refer to Section 01600 Product Requirements.
- B. Sealed Insulating Glass Units: Types as indicated above.
 - 1. Durability: Certified by an independent testing agency to comply with ASTM E 2190.
 - 2. Edge Spacers: Aluminum, bent and soldered corners.
 - 3. Edge Seal: Glass to elastomer with supplementary silicone sealant.
 - 4. Purge interpane space with dry hermetic air.
- C. Insulated Glass Units Double pane with dual seal; Primary sealant to be polyisobutylene and secondary sealant to be polysulfide, silicone or hotmelt butyl (manufacturer's option) edge seal.
 - 1. Outer pane of Pyrolytic Low-E glass, inner pane of Clear Float glass.
 - 2. Place low E coating on No.2 surface within the unit.
 - 3. Durability: Certified by an independent testing agency to comply with ASTM E 2190.
 - 4. Comply with ASTM E 774 and E 773, Class CBA.
 - 5. Purge interpane space with dry hermetic air.
 - 6. Total unit thickness of 1" minimum.
 - 7. Edge Seal Construction: Aluminum, bent and soldered corners.

2.03 GLAZING COMPOUNDS

- A. Manufacturers:
 - 1. Bostik Inc: <u>www.bostik-us.com</u>.
 - 2. GE Plastics: <u>www.geplastics.com</u>.
 - 3. Pecora Corporation: <u>www.pecora.com</u>.
 - 4. BASF Construction Chemicals-Building Systems: <u>www.chemrex.com</u>.
 - 5. Substitutions: Refer to Section 01600 Product Requirements.
- B. Butyl Sealant: Single component; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; Shore A hardness of 10 to 20; black color; non-skinning.
- C. Polysulfide Sealant: Two component; chemical curing, non-sagging type; ASTM C 920, Type M, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.
- D. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.

2.04 GLAZING ACCESSORIES

A. Setting Blocks: EPDM, Silicone or Neoprene, as required for compatibility with glazing sealant, 80 to 90 Shore A durometer hardness, ASTM C 864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

- B. Spacer Shims: EPDM, Silicone or Neoprene blocks as required for compatibility with glazing sealant, 50 to 60 Shore A durometer hardness, ASTM C 864 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application.
- C. Edge Blocks: Neoprene, EPDM or Silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) og glass.
- D. Compressible Filler Rods: Closed-cell or waterproof jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.
- E. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; and of appropriate size; black color.
 - 1. Manufacturers:
 - a. Pecora Corporation: <u>www.pecora.com</u>.
 - b. Saint-Gobain Performance Plastics: <u>www.plastics.saint-gobain.com</u>.
 - c. Substitutions: Refer to Section 01600 Product Requirements.
- F. Glazing Gaskets: EPDM or Neoprene extruded or molded shapes to suit glazing channel retaining slot; ASTM C 864 Option I; black color.
 - 1. Hardness: ASTM D2240 Type A. 50 (+/-5) duromeeter.
 - 2. Tensile Strength: ASTM D412. 800psi (min.).
 - 3. Elongation: 300% (min.).
- G. Glazing Clips: Manufacturer's standard type.
- H. Cellular Elastomeric Preformed Gaskets: Extruded or molded closed cell, integral skinned neoprene of profile and hardness required to maintain watertight seal; complying with ASTM C 509, Type II; black color.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings for glazing are correctly sized and within tolerance.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant.
- D. Install sealants in accordance with ASTM C 1193 and FGMA Sealant Manual.
- E. Install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)

- A. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.
- 3.04 INSTALLATION EXTERIOR DRY METHOD (TAPE AND GASKET SPLINE GLAZING)

- A. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- E. Trim protruding tape edge.

3.05 INSTALLATION - EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

- A. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with butyl sealant.
- B. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- D. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.
- E. Install removable stops, with spacer strips inserted between glazing and applied stops, 1/4 inch below sight line.
- F. Fill gap between glazing and stop with wet type sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.
- G. Apply cap bead of wet type sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.
- 3.06 INSTALLATION INTERIOR DRY METHOD (TAPE AND TAPE)
 - A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.
 - B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
 - C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
 - D. Place glazing tape on free perimeter of glazing in same manner described above.
 - E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
 - F. Knife trim protruding tape.

3.07 MANUFACTURER'S FIELD SERVICES

- A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- B. Monitor and report installation procedures and unacceptable conditions.

3.08 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.
- 3.09 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION 08 8000

SECTION 09 2116

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Acoustic insulation.
- E. Gypsum sheathing.
- F. Gypsum wallboard.
- G. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 05 4000 Cold-Formed Metal Framing: Exterior wind-load-bearing metal stud framing.
- B. Section 06 1000 Rough Carpentry: Wood blocking product and execution requirements.
- C. Section 07 2500 Weather Barriers: Water-resistive barrier over sheathing.

1.03 REFERENCE STANDARDS

- A. ASTM C475/C475M Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.
- B. ASTM C645 Standard Specification for Nonstructural Steel Framing Members; 2014.
- C. ASTM C754 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2015.
- D. ASTM C840 Standard Specification for Application and Finishing of Gypsum Board; 2013.
- E. ASTM C954 Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2015.
- F. ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- G. ASTM C1280 Standard Specification for Application of Gypsum Sheathing; 2013.
- H. ASTM C1396/C1396M Standard Specification for Gypsum Board; 2014.
- I. ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- J. ASTM E413 Classification for Rating Sound Insulation; 2010.
- K. GA-216 Application and Finishing of Gypsum Board; Gypsum Association; 2013.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:

- 1. Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- C. Shaft Walls at Elevator Shafts: Provide completed assemblies with the following characteristics:
 - 1. Air Pressure Within Shaft: Intermittent loads of 10 lbf/sq ft with maximum mid-span deflection of L/240.
 - 2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- D. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.

2.02 METAL FRAMING MATERIALS

- A. Manufacturers Metal Framing, Connectors, and Accessories:
 - 1. Clarkwestern Dietrich Building Systems LLC; www.clarkdietrich.com.
 - 2. Substitutions: See Section 01 6000 Product Requirements.
- B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
 - 1. Studs: "C" shaped with flat or formed webs with knurled faces.
 - 2. Runners: U shaped, sized to match studs.
 - 3. Ceiling Channels: C-shaped.
- C. Shaft Wall Studs and Accessories: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.
- D. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- E. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

2.03 BOARD MATERIALS

- A. Manufacturers Gypsum-Based Board:
 - 1. National Gypsum Company; www.nationalgypsum.com.
 - 2. USG Corporation; www.usg.com.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - 2. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Ceilings: 1/2 inch.
- C. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Ceilings, unless otherwise indicated.
 - 2. Thickness: 1/2 inch.
 - 3. Edges: Tapered.
- D. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
 - 1. Application: Exterior sheathing, unless otherwise indicated.
 - 2. Edges: Square.

2.04 ACCESSORIES

- A. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- B. Water-Resistive Barrier: As specified in Section 07 2500.
- C. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.

- D. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.
- E. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 SHAFT WALL INSTALLATION

- A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
 1. Install studs at spacing required to meet performance requirements.
- B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.

3.03 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as permitted by standard.
 - 1. Level ceiling system to a tolerance of 1/1200.
 - 2. Laterally brace entire suspension system.
- C. Studs: Space studs at 16 inches on center.
 - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 - 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
 - 3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.
- D. Blocking: Install mechanically fastened steel sheet blocking for support of:
 - 1. Framed openings.
 - 2. Wall mounted cabinets.
 - 3. Plumbing fixtures.
 - 4. Toilet accessories.
 - 5. Wall mounted door hardware.

3.04 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.05 BOARD INSTALLATION

- A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- C. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 - 1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
- B. Corner Beads: Install at external corners, using longest practical lengths.
3.07 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.

END OF SECTION

SECTION 09 3000 TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for wall applications.
- B. Cementitious backer board as tile substrate.
- C. Ceramic accessories.
- D. Ceramic trim.

1.02 RELATED REQUIREMENTS

- A. Section 03 5400 Cast Underlayment.
- B. Section 07 9200 Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136.1 American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2013.1.
- B. ANSI A108.1a American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2014.
- C. ANSI A108.1b American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- D. ANSI A108.1c Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement; 1999 (Reaffirmed 2010).
- E. ANSI A108.4 American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
- F. ANSI A108.5 American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- G. ANSI A108.6 American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 1999 (Reaffirmed 2010).
- H. ANSI A108.8 American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2010).
- I. ANSI A108.9 American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2010).
- J. ANSI A108.10 American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).
- K. ANSI A108.11 American National Standard for Interior Installation of Cementitious Backer Units; 2010 (Revised).
- L. ANSI A108.12 American National Standard for Installation of Ceramic Tile with EGP (Exterior glue plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- M. ANSI A108.13 American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2010).
- N. ANSI A118.4 American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).

- O. ANSI A118.7 American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Revised).
- P. ANSI A118.9 American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2010).
- Q. ANSI A118.10 American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.
- R. ANSI A118.12 American National Standard Specifications for Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation; 2014.
- S. ANSI A118.15 American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
- T. ANSI A118.15 American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
- U. ANSI A137.1 American National Standard Specifications for Ceramic Tile; 2013.1.
- V. TCNA (HB) Handbook for Ceramic, Glass, and Stone Tile Installation; 2015.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.

1.05 QUALITY ASSURANCE

A. Maintain one copy of and ANSI A108/A118/A136.1 and TCNA (HB) on site.

1.06 MOCK-UP

- A. See Section 01 4000 Quality Requirements, for general requirements for mock-up.
- B. Construct tile mock-up where indicated on the drawings, incorporating all components specified for the location.
 - 1. Minimum size of mock-up is indicated on the drawings.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers: All products of each type by the same manufacturer.
 - 1. American Olean Corporation: www.americanolean.com.
 - 2. Dal-Tile Corporation: www.daltile.com.
- B. Ceramic Tile, Type: Largo Glazed Cermaic by daltile
 - 1. Size: 4 by 12 inch, nominal.
 - 2. Shape: Rectangular.
 - 3. Edges: Square. Include Wall Bullnose, Radius Bullnose, and Radius Bullnose Corner
 - 4. Surface Finish: Glazed.
 - 5. Color(s): To be selected by Architect from manufacturer's standard range.

2.02 TRIM AND ACCESSORIES

- A. Ceramic Accessories: Glazed finish, same color and finish as adjacent field tile; same manufacturer as tile.
- B. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
 - 1. Applications:

- a. Open Edges: Schluter RONDEC-DB
- b. Inside Corners: Jointed.
- c. Floor to Wall Joints: Cove base.
- 2. Manufacturers: Same as for tile. Schluter for open edges.

2.03 SETTING MATERIALS

- A. Manufacturers:
 - 1. ARDEX Engineered Cements; www.ardexamericas.com.
 - 2. LATICRETE International, Inc; www.laticrete.com.
 - 3. Substitutions: See Section 01 6000 Product Requirements.
- B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4, ANSI A118.15
 - 1. Products:
 - a. ARDEX Engineered Cements; ARDEX X 77 MICROTEC: www.ardexamericas.com.
 - b. LATICRETE International, Inc; LATICRETE 254 Platinum: www.laticrete.com.
 - c. Substitutions: See Section 01 6000 Product Requirements.

2.04 GROUTS

- A. Manufacturers:
 - 1. ARDEX Engineered Cements; www.ardexamericas.com.
 - 2. Custom Building Products; www.custombuildingproducts.com.
 - 3. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com.
 - 4. Substitutions: See Section 01 6000 Product Requirements.
- B. Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
 - 1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
 - 2. Use sanded grout for joints 1/8 inch wide and larger; use un-sanded grout for joints less than 1/8 inch wide.

2.05 MAINTENANCE MATERIALS

- A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
 - 1. Applications: Between tile and plumbing fixtures.
 - 2. Color(s): As selected by Architect from manufacturer's full line.
- B. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
 - 1. Composition: Water-based colorless silicone.

2.06 ACCESSORY MATERIALS

- A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
 - 1. Type: Fluid-applied.
 - 2. Thickness: 20 mils, maximum.
 - 3. Crack Resistance: No failure at 1/16 inch gap, minimum.
- B. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners. Provide backer board at all locations where wall tile and floor tile is to be installed except for concrete slabs.
- C. Transition strips and edging: Provide transition strips and edging equivalent to Schluter-Reno-U and other profiles necessary to create smooth transitions between tile and other floor finishes. All profiles are to meet UFAS/ANSI accessible requirements.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances using cementitious cast underlayment.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

3.02 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1A thru A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install transitions between tile and other floor finishes.
- H. Sound tile after setting. Replace hollow sounding units.
- I. Keep control and expansion joints free of mortar, grout, and adhesive.
- J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- K. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.03 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.

3.04 INSTALLATION - WALL TILE

A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.

3.05 CLEANING

A. Clean tile and grout surfaces.

3.06 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 5100 SUSPENDED ACOUSTICAL CEILINGS

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Suspended metal grid ceiling system.
 - B. Acoustical units.

1.2 REFERENCE STANDARDS

- A. ASTM C635/C635M Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.
- B. ASTM C636/C636M Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- C. ASTM E1264 Standard Classification for Acoustical Ceiling Products; 2014.
- D. CAL (CHPS LEM) Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS); current edition at www.chps.net/.
- E. NFPA 286 Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2015.
- F. UL (FRD) Fire Resistance Directory; current edition.
- G. UL (GGG) GREENGUARD Gold Certified Products; current listings at http://http://productguide.ulenvironment.com/QuickSearch.aspx.
- 1.3 ADMINISTRATIVE REQUIREMENTS
 - A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
 - B. Do not install acoustical units until after interior wet work is dry.
- 1.4 SUBMITTALS
 - A. See Section 01 3000 Administrative Requirements, for submittal procedures.
 - B. Shop Drawings: Indicate grid layout and related dimensioning.
 - C. Product Data: Provide data on suspension system components.
 - D. Samples: Submit two samples 4 by 4 inch in size illustrating material and finish of acoustical units.
- 1.5 QUALITY ASSURANCE
 - A. Fire-Resistive Assemblies: Complete assembly listed and classified by UL (FRD) for the fire resistance indicated.
 - B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
 - C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- 1.6 FIELD CONDITIONS
 - A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
 - A. Acoustic Tiles/Panels:
 - 1. Armstrong World Industries, Inc; www.armstrong.com.
 - 2. CertainTeed Corporation; www.certainteed.com.
 - 3. USG; USG Fissured Basic Acoustical Panels, Fire Rated: www.usg.com.
 - 4. Substitutions: See Section 01 6000 Product Requirements.
 - B. Suspension Systems:
 - 1. Same as for acoustical units.
- 2.2 ACOUSTICAL UNITS
 - A. Acoustical Units General: ASTM E1264, Class A.
 - 1. Units for Installation in Fire-Rated Suspension System: Listed and classified for the fireresistive assembly as part of suspension system.
 - 2. VOC Content: Certified as Low Emission by one of the following:
 - a. Product listing in UL (GGG).
 - B. Acoustical Tile: Soil-Resistant Polyester Film
 - 1. Size: 24 by 48 inches.
 - 2. Thickness: 15/16 inches.
 - 3. Products:
 - a. Clean Room VL Unperforated
 - c. Substitutions: See Section 01 6000 Product Requirements.

2.3 SUSPENSION SYSTEM(S)

- A. Suspension Systems General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- B. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; light-duty.
 - 1. Profile: Tee; 15/16 inch wide face.
 - 2. Finish: White painted.

PART 3 EXECUTION

- 3.1 EXAMINATION
 - A. Verify existing conditions before starting work.
 - B. Verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION - SUSPENSION SYSTEM

- A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- B. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- C. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

- D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- G. Do not eccentrically load system or induce rotation of runners.
- 3.3 INSTALLATION ACOUSTICAL UNITS
 - A. Install acoustical units in accordance with manufacturer's instructions.
 - B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
 - C. Fit border trim neatly against abutting surfaces.
 - D. Install units after above-ceiling work is complete.
 - E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
 - F. Cutting Acoustical Units:
 - 1. Make field cut edges of same profile as factory edges.
 - G. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.

3.4 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION 09 5100

SECTION 09 6514 RESILIENT WALL BASE

PART 1 GENERAL

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Resilient Wall Base.
- 1.3 SUBMITTALS
 - A. Product Data: For each type of product indicated.
- 1.4 QUALITY ASSURANCE
 - A. Mockups: Provide resilient products with mockups specified in other Sections.
- 1.5 DELIVERY, STORAGE, AND HANDLING
 - A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by Johnsonite, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).
- 1.6 PROJECT CONDITIONS
 - A. Install resilient products after other finishing operations, including painting, have been completed.
 - B. Maintain ambient temperatures within range recommended by Johnsonite, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
 - 4. Maintain the ambient relative humidity between 40% and 60% during installation.
 - 5. Until Substantial Completion, maintain ambient temperatures within range recommended by Johnsonite, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

1.7 RESILIENT WALL BASE

- A. Manufacturer:
 - 1. JOHNSONITE Traditional vinyl toe wall base.
 - 2. ROPPE

1.8 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based formulation manufactured and warranted by a reputable manufacturer.
- B. Adhesives: as recommended by Johnsonite to meet site conditions
 - 1. Johnsonite #960 Cove Base Adhesive (Porous applications)
 - 2. Johnsonite #946 Premium Contact Bond Adhesive (Non-porous applications)
 - 3. rePlace does not require adhesive

PART 1 EXECUTION

- 2.1 EXAMINATION
 - A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.

- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- 2.2 PREPARATION
 - A. Prepare substrates according to Johnsonite's written instructions to ensure adhesion of resilient wall base.
 - B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
 - C. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 - D. Vacuum clean substrates to be covered by resilient products immediately before installation.
- 2.3 RESILIENT BASE INSTALLATION
 - A. Comply with Johnsonite's written instructions for installing resilient base.
 - B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
 - C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
 - D. Tightly adhere Millwork resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 - E. Do not stretch resilient base during installation.
 - F. Preformed corners: Install preformed corners if available before installing straight pieces.
 - G. Millwork profiles job-formed corners:
 - 1. Outside corners: Use straight pieces of maximum lengths possible and miter corners to fit.
 - 2. Inside corners: Butt one piece to corner then scribe next piece to fit.
 - 3. Replace profiles use manufactured corner profiles:

2.4 CLEANING AND PROTECTION

- A. Comply with Johnsonite's written instructions for cleaning and protection of resilient products.
- B. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Damp-mop surfaces to remove marks and soil.
 - 3. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION 09 6514

SECTION 09 6519 RESILIENT TILE FLOORING

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Resilient tile flooring.
 - C. Installation accessories:
- 1.2 RELATED REQUIREMENTS
 - A. Section 07 9200 Joint Sealants.
- 1.3 REFERENCE STANDARDS
 - A. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine; 2011.
 - B. ASTM F386 Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces; 2011.
 - C. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
 - D. ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
 - E. ASTM F2055 Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method; 2010.
 - F. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2011.

1.4 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Manufacturer's documentation for flooring and accessories:
 - 1. Technical Data.
 - 2. Installation and Maintenance.
 - 3. Warranty.
- C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- 1.5 DELIVERY, STORAGE, AND HANDLING
 - A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
 - B. Store all materials flat off of the floor in an acclimatized, weather-tight space between 65 to 85 degrees F.
- 1.6 FIELD CONDITIONS
 - A. Acclimate material at jobsite between 65 to 85 degrees F and 35 percent to 85 percent relative humidity for 48 hours prior to installation. Temperature and relative humidity should also be maintained at the same levels during installation, and after installation.
 - B. Spread unopened cartons no more than 6 cartons high and at least 4 inches apart.
 - C. Keep away from heating and cooling ducts and direct sunlight.
- 1.7 QUALITY ASSURANCE
 - A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

- B. All adhesives and sealants (including caulking) must have VOC levels, in grams per liter, less than or equal to the thresholds established by the South Coast Air Quality Management District Rule 1168
- C Any hard surface flooring product used must be in compliance with the Scientific Certification System's FloorScore program criteria.
- 1.8 WARRANTY
 - A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- PART 2 PRODUCTS
- 2.1 MANUFACTURERS
 - A. Basis of Design: Southwind , Harbor Plank, Style Number W020D
- 2.2 RESILIENT TILE FLOORING
 - A. Class III High Performance LVP:
 - 1. Pattern: as selected by Architect.
 - 2. Color: as selected by Architect and owner.
- 2.3 ACCESSORIES
 - A. Moldings, Transition and Edge Strips: Same material as flooring.

PART 3 EXECUTION

- 3.1 EXAMINATION SEE ALSO SECTION 01 7000.
 - A. Install flooring and accessories after other operations (including painting) have been completed.
 - B. Acceptance of Conditions: Carefully examine all installation areas with installer/applicator present, for compliance with requirements affecting work performance.
 - 1. Verify that field measurements, product, adhesives, substrates, surfaces, structural support, tolerances, levelness, temperature, humidity, moisture content level, pH, cleanliness and other conditions are as required by the manufacturer, and ready to receive work.
 - C. Verify that substrate is contaminant-free, including old adhesives and abatement chemicals.
 - D. Test substrates as required by manufacturer to verify proper conditions exist.
 - 1. Concrete:
 - a. Check for concrete additives such as fly ash, curing compounds, hardeners, or other surface treatments that may prevent proper bonding of floor coverings.
 - b. Moisture testing: Perform either the In-Situ Relative Humidity (RH) test (ASTM F2170) or Moisture Vapor Emission Rate (MVER) test (ASTM F1869). Refer to the Manufacturer's Installation Guide/Manual for the maximum allowable substrate moisture content. Substrates above the maximum allowable moisture content will require a moisture mitigation system.
 - c. Perform alkalinity testing to verify pH level is between 7 to 10 per ASTM F710.
 - d. Check substrate for absorbency per manufacturer's recommendations.
 - e. Perform bond testing per ASTM F710 to determine compatibility of adhesive to concrete substrate.
 - E. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

- A. Flooring installation should not begin until all site conditions have been assessed, testing has been completed and subfloor conditions are approved.
- B. Prepare per manufacturer's written instructions

3.3 INSTALLATION

A. Installation per manufacturer's written instructions, Section 01 7000, and as follows:

- 1. Layout shall be specified by Architect.
- 2. Follow layout and ensure installation reference lines are square.
- 3. Field tiles shall be installed with directional arrows on back aligned in the same direction, or may be installed in quarter-turned fashion.
- 4. Expansion Joints: Locate expansion, isolation, and other moving joints prior to installation.
 - a. Do not fill expansion, isolation, and other moving joints with patching compound or cover with resilient flooring.
 - b. Install movement joint systems per manufacturer's instructions and per Section 07 9200 and Section 07 9513.
- 5. Transition Strip: Provide rubber transition strips between LVP and other flooring types. Transition strips must meet ADA, UFAS, and ANSI accessible requirements.
- 3.4 FIELD QUALTITY CONTROL
 - A. Site tests and inspections per Section 01 4000 and as follows:
 - 1. Inspect flooring installation for non-conforming work including, but not limited to, the following:
 - a. Dirt and debris underneath flooring.
 - b. Excessive gaps.
 - c. Improper substrate preparation as indicated by telegraphing.
 - d. Damage to tiles, including: dents/indentations, cuts, cracks, burns or punctures.
 - B. Non-conforming work per General Conditions and as follows:
 - 1. Repair or replace damaged material if not acceptable to the Architect.
- 3.5 CLEANING
 - A. Provide progress cleaning per manufacturer's written instructions, Section 01 7000, and as follows:
 - 1. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the work.
 - a. Clean and protect completed construction until Date of Substantial Completion.
 - b. During installation, remove wet adhesive from surface of flooring per manufacturer's instructions.
 - 2. Site: Maintain project site free of waste materials and debris.
 - B. Provide final cleaning immediately prior to Date of Substantial Completion inspection per manufacturer's written instructions and Section 01 7000.
 - 1. Protection: Remove manufacturer's and other installed protection immediately prior to Date of Substantial Completion inspection, unless required otherwise.
 - 2. Clean floor with a neutral 6-8 pH cleaner.
- 3.6 MAINTENANCE
 - A. Initial maintenance per flooring manufacturer's written instructions and as follows:
 - 1. It is recommended that you sweep & vacuum the area immediately after installation to remove potential damaging soil and debris. You can use your flooring immediately.
 - 2. Southwind recommends using a pH neutral vinyl floor cleaner as required. Examples of pH neutral floor cleaners are Bona Stone, Tile, and Laminate Cleaner, ZEP, Diversey Stride, Hilway Direct HD pH Neutral Cleaner, Armstrongs Once-n-Done, etc.
 - 3. The listed cleaning agents are a representation of flooring cleaners that Southwind recognizes as acceptable for our products. Other neutral pH cleaner may provide satisfactory results as well.
 - 4. Southwind does not warrant any of the cleaning agents or conditions associated with them as the application of them is beyond our control.
 - 5. For commercial installations, we approve the use of a low speed (175 rpm) floor cleaning machine with 3M red or white pad. Southwind will not be responsible for damages associated with a floor cleaning machine.

- 6. Always rinse the floor thoroughly with clean water and allow to dry as the floor may be slippery when wet. Air movers or fans will speed up drying time.
- 7. Never saturate your flooring.
- 8. Do not buff, wax or use cleaning products that contain surfactants. Dish lotions, laundry detergents, Murphy Oil
- 9. Soap cleaners should not be used to maintain your flooring

3.7 PROTECTION

- A. Protect materials from construction operations until Date of Substantial Completion or Owner occupancy, whichever occurs first.
 - 1. Protect finished floor from abuse and damage by using heavy non-staining kraft paper, drop cloths or equivalent. Use additional, non-damaging protective materials as needed.
 - 2. Light foot traffic on a newly installed floor can be permitted after 24 hours.
 - 3. Keep heavy traffic and rolling loads off the newly installed LVT flooring for 48 hours.
 - 4. Protect the floor from rolling traffic by covering with protective boards.

END OF SECTION 09 6519

SECTION 09 6813 TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Carpet tile, fully adhered.
- B. Removal of existing carpet tile.

1.02 RELATED REQUIREMENTS

A. Section 03 5400 - Cast Underlayment.

1.03 REFERENCE STANDARDS

- A. ASTM D2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
- B. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- C. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- D. CRI 104 Standard for Installation of Commercial Carpet.
- E. CRI 105 Standard for Installation of Residential Carpet.
- F. NFPA 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Tile Carpeting:
 - 1. Shaw or equaivalent.
 - 2. Substitutions: See Section 01 1600 Material and Equipment.

2.02 MATERIALS

- A. Tile Carpeting: Multi-level Pattern Loop, 100% Solution Dyed
 - 1. Product: Places Collection, Sky Tile 5T174
 - 2. Tile Size: 24 by 24 inch, nominal.
 - 3. Total Thickness .224 inch.
 - 4. Finished Pile Thickness .089 inches
 - 5. Color: As selected by Architect and Owner

- 6. Pattern: quarter turn and ashlar, as directed by Architect and Owner
- 7. Smoke: less than 450
- 8. Static Control Fiber: Under 3.5KV.
- 9. Gage: 1/12 inch.
- 10. Stitches: 9 per inch.
- 11. Tufted Weight: 17 oz/sq yd.
- 12. Average Density: 6876 per cu. Yd.
- 13. Primary Backing Material: ecoworx tile

2.03 ACCESSORIES

- A. Edge Strips: Johnsonite Standard Transition Adaptors, Carpet to Resilient 1/4" to 1/8" x 1 3/8", color as selected by architect.
- B. Carpet Tile Adhesive: Recommended by carpet tile manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.
- C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and pH.
 - 1. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

- A. Remove existing carpet tile.
- B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- C. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.
- D. Vacuum clean substrate.

3.03 INSTALLATION

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install carpet tile in accordance with manufacturer's instructions.
- C. Blend carpet from different cartons to ensure minimal variation in color match.
- D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.
- F. Fully adhere carpet tile to substrate.
- G. Trim carpet tile neatly at walls and around interruptions.
- H. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 6816 SHEET CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Carpet, stretched-in
- B. Removal of existing carpet.
- C. Accessories.

1.02 REFERENCE STANDARDS

- A. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2017.
- B. CRI 104 Standard for Installation of Commercial Carpet; 2015.
- C. CRI 105 Standard for Installation of Residential Carpet; 2015.
- D. NFPA 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Samples: Submit two samples 24 by 24 inch in size illustrating color and pattern for each carpet and cushion material specified.
- D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing carpet with minimum three years documented experience.

1.05 FIELD CONDITIONS

- A. Store materials in area of installation for minimum period of 24 hours prior to installation.
- B. Maintain minimum 70 degrees F ambient temperature 24 hours prior to, during and 24 hours after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Carpet:
 - 1. Southwind.
 - 2. Substitutions: See Section 01 6000 Product Requirements.

2.02 CARPET

- A. Carpet, Type Multicolor Textured Cut Pile, solution Dyed:
 - 1. Product: Aurora Collection manufactured by Southwind Carpet Mills.
 - 2. Roll Width: 12 ft.
 - 3. Color: as selected by architect and owner.
 - 4. Pattern: as selected from: Mystic A116, Intrigue A117, Stellar A118.

2.03 ACCESSORIES

A. Sub-Floor Filler: Type recommended by carpet manufacturer.

- B. Tackless Strip: Carpet gripper, of type recommended by carpet manufacturer to suit application, with attachment devices.
- C. Seam Adhesive: Recommended by carpet manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive carpet.

3.02 PREPARATION

- A. Remove existing carpet and carpet cushion.
- B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- C. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.
- D. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- E. Clean substrate.

3.03 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install carpet in accordance with manufacturer's instructions and CRI 104 (Commercial).
- C. Verify carpet match before cutting to ensure minimal variation between dye lots.
- D. Lay out carpet and locate seams in accordance with shop drawings.
 - 1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
 - 2. Do not locate seams perpendicular through door openings.
 - 3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
 - 4. Locate change of color or pattern between rooms under door centerline.
 - 5. Provide monolithic color, pattern, and texture match within any one area.
- E. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.

3.04 STRETCHED-IN CARPET

- A. Install tackless strips with pins facing the wall around entire perimeter, except across door openings. Use edge strip where carpet terminates at other floor coverings.
- B. Space tackless strips slightly less than carpet thickness away from vertical surfaces, but not more than 3/8 inch.
- G. Double cut carpet seams, with accurate pattern match. Make cuts straight, true, and unfrayed. Apply seam adhesive to all cut edges immediately.
- H. Join seams by hand sewing. Form seams straight, not overlapped or peaked, and free of gaps.
- I. Following seaming, hook carpet onto tackless strip at one edge, power stretch, and hook firmly at other edges. Follow manufacturer's recommendations for method and amount of stretch.
- J. Trim carpet neatly at walls and around interruptions. Tuck edges into space between tackless strip and wall.

3.06 CLEANING

- A. Remove excess adhesive from floor and wall surfaces without damage.
- B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 8800 PROTECTIVE, ANTI-CARBONATION, CRACK-BRIDGING COATING

PART 1 - GENERAL

1.1 SUMMARY

- 1. Furnish all materials, labor, tools, equipment and services necessary for the preparation of the substrate and the application of a protective, anti-carbonation, crack-bridging coating as indicated by the drawings and specifications.
- 2. This section specifies components of a concrete repair and protection system that shall be provided by a single manufacturer.

1.2 SUBMITTALS

- Submit all proposed material substitutions ten days prior to the bid opening date. Include written verification that the proposed substitute meets or exceeds all the performance criteria specified in this section. If the proposed substitute does not meet or exceed all the performance criteria specified in this section, submit the respective performance criteria of the proposed substitute, project references demonstrating a proven record of performance, compatibility documentation with entire concrete repair and protection system, and the cost savings to the owner.
- 2. Submit warranty upon acceptance of work.
- 3. All materials shall be from one single manufacturer covered under one single manufacturer's warranty.

1.3 QUALITY ASSURANCE

- 1. The contractor shall be experienced in concrete repair and protection. This shall be demonstrated by providing five successful concrete repair and protection project references.
- 2. The manufacturer shall be experienced in concrete repair and protection. This shall be demonstrated by providing proof of producing concrete repair and protection products for a minimum of ten years. Manufacturers that do not comply with the ISO 9000 quality standard in the development, manufacturing, and sale of their products shall not be acceptable.
- 3. The contractor shall schedule a site meeting with a representative of the product prior to commencement of work.
- 4. Deliver products in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Store and condition the product in full compliance with the manufacturer's recommendations.
- 5. The contractor shall supply a complete warranty for workmanship for one year commencing with the date of acceptance of work. The manufacturer shall supply a complete warranty for materials for one year commencing with the date of acceptance of work.

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PART 2 - PRODUCTS

2.1 PROTECTIVE, ANTI-CARBONATION, CRACK-BRIDGING COATING

- 1. The specified product has been selected to establish a minimum standard of quality that will be accepted. The listing of the product is not intended to limit competition, but to establish the standard of quality. Proposed substitutions must be submitted, and shall conform to the standard of quality, as established in these specifications.
- 2. Specified product: Sikagard 550W Elastic, as manufactured by Sika Corporation, Lyndhurst, New Jersey

2.2 PERFORMANCE CRITERIA

- 1. The product shall be available in any color.
- 2. Five independent project reports must conclude that bond, crack-bridging, carbonation resistance, wear, and appearance properties have performed for minimum of ten years.
- 3. Elongation at break (ASTM D412 Modified, 73F): > 1,000 %.
- 4. Elongation at break (ASTM D412 Modified, -20F): > 450 %.
- 5. Water vapor diffusion: < 13 ft.
- 6. Carbon dioxide diffusion: > 150 ft.
- 7. Weathering (ASTM G23, 4,000 hours): No chalking or cracking.
- 8. Coating thickness: 16 dry mils.

PART 3 - EXECUTION

3.1 PREPARATION

1. Surfaces should be clean and sound with an open-textured, sandpaper-like profile. Remove all grease, curing compounds, surface treatments, coatings, oils, and the like by mechanical means such as sandbasting or waterblasting. Substrate must be dry, and all bug-holes and irregularities should be leveled prior to coating.

3.2 APPLICATION

1. Apply coating by brush, roller, or spray equipment in one direction. Apply first coat at 100 sqft./gal. and wait a minimum of 2 hours before applying second coat, also at 100 sqft./gal. Always maintain a wet edge and box (blending of various batches) when using multiple batches of coating.

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2. Adhere to all procedures, limitations and cautions for the product in the manufacturer's current printed literature

3.3 CLEANING

1. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION

PAINTING

SECTION 09 9123

1. PART1 GENERAL

1.1 SECTION INCLUDES

A. Interior and exterior paint including; paint and stains.

1.2 RELATED SECTIONS

- A. Coordinate with other prime contractors and sub-contractors to assure proper incorporation of and provision for items to be furnished or installed by them.
- B. Do not paint non-ferrous metals such as aluminum, stainless steel, copper, and lead coated copper, brass and bronze, or metals with baked enamel factory finish.

1.3 REFERENCES

- A. SSPC-SP 1 Solvent Cleaning
- B. SSPC-SP 2 Hand Tool Cleaning
- C. SSPC-SP 3 Power Tool Cleaning
- D. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete
- E. EPA-Method 24
- F. South Coast Air Quality Management District (SCAQMD) Rule 1113

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300 Submittals.
- B. Product Data: Manufacturer's data sheets on each paint and coating product should include:
 - 1 Product characteristics
 - 2 Surface preparation instructions and recommendations
 - 3 Primer requirements and finish specification
 - 4 Storage and handling requirements and recommendations
 - 5 Application methods
 - 6 Cautions
- C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's color samples available.
- D. Verification Samples: For each finish product specified, submit samples that represents actual product, color, and sheen.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufactures name, label, and the following list of information:
 - 1. Product name, type (description)
 - 2. Application & use instructions
 - 3. Surface preparation
 - 4. VOC content
 - 5. Environmental issues

- 6. Batch date
- 7. Color number
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- C. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.
- D. Keep all waste and paint rags in tightly covered metal containers. Gather up all material and dispose of at end of each work day.
- E. Mount an approved type fire extinguisher immediately outside all paint storage areas.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
 - 1. The Sherwin-Williams Company
 - 2. PPG
 - 3. Prat and Lambert
 - 4. Approved Equal

2.2 MATERIALS - GENERAL REQUIREMENTS

- A. Paints and Coatings General:
 - Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers:
 - 1. Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
 - 2. C. All interior paints and primers must have VOC levels, in grams per liter, less than or equal to the thresholds established by South Coast Air Quality Management District (SCAQMD) Rule 1113

2.3 ACCESSORIES

A. Coating Application Accessories:

3

1. Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required per manufacturer's specifications.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared. Proceed with work only after conditions have been corrected, and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Proceed with work only after conditions have been corrected, and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

3.2 SURFACE PREPARATION:

- A. Proper product selection, surface preparation, and application affect coating performance. Coating integrity and service life will be reduced because of improperly prepared surfaces. Selection and implementation of proper surface preparation ensures coating adhesion to the substrate and prolongs the service life of the coating system.
- B. Selection of the proper method of surface preparation depends on the substrate, the environment, and the expected service life of the coating system. Economics, surface contamination, and the effect on the substrate will also influence the selection of surface preparation methods.
- C. The surface must be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
- D. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry 48 hours before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
- E. No exterior painting should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50°F unless the specified product is designed for the marginal conditions.
- F. Methods:
 - 1. CMU

Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75°F.The pH of the surface should be between 6 and 9, unless the products to be used are designed to be used in high pH environments such as Loxon. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a cement patching compound.

2. Drywall-Interior

Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.

3. Galvanized Metal

Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP7 is necessary to remove these treatments.

4. Wood

Must be clean and dry. Prime and paint as soon as possible. Knots and pitch streaks must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

5. Aluminum Railings and Handrails Powder Coating

Provide a 1-2 mil profile via chemical, mechanical or blasting.

3.3 INSTALLATION

- A. Apply all coatings and materials with manufacture specifications in mind. Mix and thin coatings according to manufacture recommendation.
- B. Do not apply to wet or damp surfaces.
 - 1. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days.
 - 2. Test new concrete for moisture content.
 - 3. Wait until wood is fully dry after rain, fog or dew.
- C. Apply coatings using methods recommended by manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
- F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
- G. Exterior Woodwork: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 2 weeks.
- H. Inspection: The coated surface must be inspected and approved by the engineer or engineer just prior to each coat.

3.4 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.
- C. Furnish and lay drop cloths in all areas where painting and finishing work is being done and protect all other work from defacement. Promptly replace all temporary protective coverings removed too early from any part of the work and make good any damage from neglect.

3.5 SCHEDULES

A. MASONRY

1. Latex Systems

a.

a.

Semi-Gloss Finish1st Coat: S-W Heavy Duty Block Filler, B42W462nd Coat:S-W DTM Acrylic Semi-Gloss Coating, B66-200 Series3rd Coat:S-W DTM Acrylic Semi-Gloss Coating, B66-200 Series

B. METAL

1. Latex Systems

Semi-Gloss Finish 1st Coat: S-W Kem Kromik® Universal Metal Primer, B50AZ0006 2nd Coat: S-W DTM Acrylic Semi-Gloss Coating, B66-200 Series 3rd Coat: S-W DTM Acrylic Semi-Gloss Coating, B66-200 Series

- C. Aluminum
 - 1. Powder Coating

а

a.

Satin Finish	
1st Coat:	Apply PPG Ultra Primer - PCMT70101
2nd Coat:	TGIC Polyester (Satin 20-30 Gloss)

D. WOOD

1. Stain & Varnish (opened or closed grain)

Clear Finish 1st Coat: S-W Wood Classics® Interior Oil Stain, A49 Series 2nd Coat: S-W Wood Classics® Polyurethane Varnish, Gloss, A67V1 3rd Coat:S-W Wood Classics® Polyurethane Varnish, Gloss or Satin, A67 Series

- 2. Exterior (opened or closed grain)
 - a. Semi-Gloss Finish

1st Coat:	S-W A-100 [®] Exterior Latex Wood Primer, B42W41
2 nd Coat:	S-W DTM Acrylic Semi-Gloss Coating, B66-200 Series
3 rd Coat:	S-W DTM Acrylic Semi-Gloss Coating, B66-200 Series

E. DRYWALL

1. Latex Systems

a.

Walls: Eggshell & Ceilings: Flat

1st Coat: S-W PrepRite® Classic Latex Primer, B28W101 2nd Coat: S-W ProMar 200® Waterbased Acrylic-Alkyd 3rd Coat: S S-W ProMar 200® Waterbased Acrylic-Alkyd

F. ZONE MARKING

1. Latex Systems

a. Flat Finish

- a. Various existing surfaces shall be finished as indicated above, except all existing surfaces must be thoroughly cleaned and all loose paint and any foreign materials removed prior to finishing. First coat primers or sealers will not be required except on bare or unfinished surfaces.
- G. Paint shall be applied in strict conformity with manufacturer's directions for original application.

END OF SECTION 09 9123

SECTION 10916

CLOSET WIRE SHELVING SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Vinyl-coated ventilated shelving
- B. Laminated closet systems
- C. Specialty Wardrobes
- D. Adjustable shelf systems
- E. Storage accessories

1.2 RELATED SECTIONS

- A. Section 09260 Gympsum Board Assemblies.
- B. Section 03300 Cast-In-Place Concrete.
- C. Section 04220 Concrete Masonry Units.
- D. Section 06110 Wood Framing.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Date: manufacturer's catalog data, detail sheets and specifications.
- C. Shop Drawings: Prepared specifically for this project: show dimensions of shelving and interface with other products.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches square, representing actual product, color and patterns.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer within a minimum of ten (10) years experience.
- B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Engineer.
 - 2. Do not proceed with remaining work until workmanship, color and sheen are approved by Engineer.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Acceptable Manufacturer: ClosetMaid Corporation, which is located at 650 SW 27th Avenue, Ocala, FL 34471-2034; Toll Free Tel: 800-874-0008; Tel: 352-401-6000; Fax: 352-732-2140; Email: lou.cuomo@emerson.com; Web: www.closetmaid.com

B. Approved Equals

2.2 MATERIALS

A. Steel Wire: Basic cold drawn, Grade C-1006; average tensile strength over 100,00 psi (690MPa); coated.

B. Wire Coating: Proprietary heavy-duty polyvinyl chloride (PVC) formula resin, plasticizers, stabilizer, pigments and other additives.

- 1. Thickness: 9 to 11 mils (0.220 to 0.279 mm).
- 2. Classification: No ingredients listed as hazardous per OSHA 29CFR1910.0017.
- C. Hang Rod: 1 inch (25mm) diameter by 20 gauge tubular steel.
- D. Accessories:
 - 1. Wall Clips
 - 2. End Brackets
 - 3. Support Brackets
 - 4. Poles
 - 5. Standards
 - 6. Shelf Brackets
 - 7. Pole Clips

PART 3 EXECUTION

- 3.3 EXAMINATION
 - A. Verification of Conditions:

- 1. Prepared conditions under which installation is to performed; submit written notification if such conditions are unacceptable.
- 2. Framing, reinforcement, and anchoring devices are correct type and are located in accordance with shop drawings.
- B. Installer's Examination:
 - 1. Examine conditions under which installation is to be performed; submit written notification if such conditions are unacceptable.
 - 2. Installation activities before unacceptable conditions have been corrected are prohibited.
 - 3. Installation indicates installer's acceptance of conditions

3.2 INSTALLATION

A. Cut shelves $\frac{1}{2}$ inch to 1 3/8 inches (12.7 to 35mm) shorter than actual wall measurements; cap all exposed ends.

B. Install shelving plumb and level at heights indicated in accordance with shop drawings and manufacturer's printed installation instructions.

- C. Place wall clips No. 910, 011 every 10 to 12 inches (250 to 300mm) on level line.
- D. Install end brackets No. 932, 933, 914 on same level lines as wall clips, centered on the front rods of shelves. Support shelves 36 inches (915 mm) maximum with end brackets, support brackets or poles.
- E. Drill holes where required using sharp bit; do not punch.

F. Drywall: Drill ¼ inch (6mm) hole, insert Preloaded No. 910 or 911 wall clip and use No. 658 # 8 x1 inch pin to expand anchor.

G. Wood: Drill ¼ inch (6mm) hole into wood, secure wall clip with No. 8x1 inch (25mm) screw or secure pole clip No. 978 directly to wood with No. 8 x 1 ¼ inch (31 mm) screws.

H. Concrete: Drill ¼ inch (6mm) hole with masonry bit, insert wall clip No. 911 or 978, secure with No. 8 x 1 inch (25mm) screws

I. Standard and Brackets:

1. Install standards vertically every 16 inches (400mm) on studs

2. Install horizontal tracks level, secured with screws or mollies in studs or drywall; use hanging adapters to connect wall standards for hanging

3. Attach shelf brackets with SuperSlide, Heavy Duty, Linen Shelf and Rod and Close Mesh 12- inch (300 mm) or 16 or 20 inch decking.

J. Use lightning pole clip No. 978 for linen shelving, clip No. 977 for shelf and rod shelving.

K. Shelf Supports:

1. Place shelf support brackets No. 1164, 1166, or 1180 vertically to the shelf, attach with No. 954 or 955 wall anchors.

2. Install down clips No. 978, 981 or cable clips No. 612 with ¼ inch (6mm) anchor on the back rod behind every support bracket.

3. 36 inches (900 mm) o.c. maximum.

4. 24 inches (600 mm) o.c. maximum.

L. Attach No. 977 or 978 pole clips at same elevations as wall clips for a give shelf; use with No. 117 or 118 poles.

- M. Use No. 120 corner support brackets on all corner "butt" joints.
- N. For wall to wall installation, use lighting end bracket No. 932 or 933; drill 1/4 inch

(6 mm) holes, and secure with No. 658 #8 x1 inch pins.

- O. SuperSlide Component Installation:
- P. Blocking: Provide blocking in walls for support at all anchor points.

1. Place hang bar supports No. 925 or 5672 every 24 to 36 inches (600-900 mm); place express support brackets (No. 1164) adjacent to supports.

2. Use SuperSlide end bracket No. 979 or 980 at side wall where pole is used

3. Use 12 inch (300 mm) express support brackets (No. 1164) for 12 inch or 16 inch (300-400 mm) deep shelves

4. Place pole caps No. 2083 on cut ends of poles

5. Use pole connector No. 2085 to connect $\frac{3}{4}$ inch (19 mm) poles; rest joints in brackets No. 925 or 5672

6. For side wall installation, use end bracket No. 979 or 980

7. For open end installations, use down clips No. 978, 981, or 612 (612 stud installation preferred)

- P. Provide support poles at 36" o.c.
- 3.3 CLEANING

A. As work proceeds, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris related to this work

B. Upon completion of installation, clean all surfaces that have become soiled during installation.

END OF SECTION 10916

SECTION 10 1400 SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Room and door signs.
- B. Exterior building signage
- C. Exterior Monument Signage

1.02 REFERENCE STANDARDS

- A. 36 CFR 1191 Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 Accessible and Usable Buildings and Facilities; 2009.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When room numbers to appear on signs differ from those on the drawings, include the drawing room number on schedule.
 - 2. Submit for approval by Owner through Architect prior to fabrication.
- D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Flat Signs:
 - 1. Best Sign Systems, Inc; ImPressions: www.bestsigns.com.
 - 2. Inpro; www.inprocorp.com.
 - 3. Substitutions: See Section 01 6000 Product Requirements.
- B. Dimensional Letter Signs:
 - 1. Inpro; www.inprocorp.com.
 - 2. impact signs . impactsigns.com
 - 3. Substitutions: See Section 01 6000 Product Requirements.

2.02 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and UFAS, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Room and Door Signs: Provide a sign for every door.
 - 1. Sign Type: Flat signs with thermoforming panel media as specified.
 - 2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
 - 3. Character Height: 1 inch.
 - 4. Sign Height: 3 inches, unless otherwise indicated on the drawings.
- C. Exterior Building Sign on Canopy: As indicated on drawings
 - 1. Sign Type: Dimensional Letters

2.03 SIGN TYPES

- A. Flat Signs: Signage media without frame.
 - 1. Edges: Bevelled.
 - 2. Corners: Radiused.
 - 3. Wall Mounting of One-Sided Signs: Concealed screws.
 - 4. Color: As selected by Architect and Owner
 - 5. Character Font: Helvetica, Arial, or other sans serif font.
 - 6. Character Case: Upper case only.
 - 7. Background Color: as selected by Architect and Owner.
 - 8. Character Color: Contrasting color.
- B. Dimensional Letters:

2.04 TACTILE SIGNAGE MEDIA

- A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:
 - 1. Total Thickness: 1/16 inch.
- B. Injection Molded Panels: One-piece acrylic plastic, with raised letters and braille.
 1. Total Thickness: 1/8 inch.

2.06 DIMENSIONAL LETTERS

- A. 8" and 10" Metal Letters: Sizes noted on drawings.
 - 1. Metal: Aluminum casting.
 - 2. Mounting: Concealed screws.

2.07 ACCESSORIES

A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.
D. Protect from damage until Substantial Completion; repair or replace damaged items. END OF SECTION

SECTION 10 2601 WALL AND CORNER GUARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Blocking for wall and corner guard anchors.

1.03 REFERENCE STANDARDS

- A. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ICC A117.1 Accessible and Usable Buildings and Facilities; 2009.
- C. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- D. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials; 2016a.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
- C. Samples: Submit two sections of corner guard, 24 inch long, illustrating component design, configuration, color and finish.
- D. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wall and Corner Guards:
 - 1. Babcock-Davis;www.babcockdavis.com/sle.
 - 2. Construction Specialties, Inc; www.c-sgroup.com.
 - 3. Inpro; www.inprocorp.com.
 - 4. Nystrom, Inc; www.nystrom.com/sle.
 - 5. Trim-Tex, Inc; www.trim-tex.com.

2.02 COMPONENTS

- A. Corner Guards Surface Mounted:
 - 1. Material: High impact vinyl.
 - 2. Width of Wings: 2 inches.
 - 3. Corner: Square.
 - 4. Color: As selected from manufacturer's standard colors.
 - 5. Length: One piece.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.
- B. Position corner guard 5 inches above finished floor to 48 inches high.

3.02 TOLERANCES

A. Maximum Variation From Required Height: 1/4 inch.

END OF SECTION

SECTION 10 2800 TOILET AND BATH ACCESSORIES

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Accessories for residential bathrooms.
- 1.2 RELATED REQUIREMENTS
 - A. Section 06 1000: Concealed supports for accessories, including in wall framing and plates, above ceiling framing, and Blocking.

1.3 REFERENCE STANDARDS

- A. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- C. ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- D. ASTM A666 Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- E. ASTM B456 Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011.
- F. ASTM C1036 Standard Specification for Flat Glass; 2011.
- G. ASTM C1048 Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- H. ASTM C1503 Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).
- I. ASTM F2285 Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use; 2004 (Reapproved 2010).
- 1.4 ADMINISTRATIVE REQUIREMENTS
 - A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.5 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Samples: Submit two samples of each accessory, illustrating color and finish.
- D. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Toilet Accessories:
 - 1. AJW Architectural Products; www.ajw.com.
 - 2. Bradley Corporation; www.bradleycorp.com.
 - 3. Substitutions: Section 01 6000 Product Requirements.
- 2.2 MATERIALS
 - A. Accessories General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - B. Keys: Provide 4 keys for each accessory to Owner; master key lockable accessories.
 - C. Stainless Steel Sheet: ASTM A666, Type 304.

- D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- E. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
- F. Adhesive: Two component epoxy type, waterproof.
- G. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
- H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.3 FINISHES

- A. Stainless Steel: No. 8 Mirror finish, unless otherwise noted.
- B. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.
- 2.6 RESIDENTIAL ACCESSORIES
 - A. Recessed Medicine Cabinet: Stainless steel cabinet, shelves, door, hinge, and mirror frame, reversible type, surface-mounted.
 - 1. Product: Bradley 175.
 - 2. Shelves: Adjustable, aluminum or glass; provide not less than 3 shelves.
 - 3. Door: Fitted with continuous piano-type hinge, shock-absorbing spring-and-rod door stop, magnetized catch, right-hand swing.
 - B. Mirror: Channel Frame Mirror, series 175-11 by Bradley
 - C. Mirror Glass, cut to fit. Coordinate with drawings and field verify actual dimensions.
 - D. Storage Cabinet: Style Selections 23.25inW x 28inH x7inD: White Bathroom Wall Cabinet Item# 108779 model# TT210
 - E. Towel Bar: Stainless steel Type 304, 3/4 inch (20 mm) square tubular bar; rectangular brackets, concealed attachment, satin finish.
 - 1. Length: as indicated on drawings
 - 2. Product: Bradley 9054 manufactured by Bradley.
 - F. Towel Ring: Stainless steel, 2-1/2 inch (64 mm) extension from wall, with 1/4 inch (6 mm) diameter trapezoidal shaped ring, rectangular-shaped bracket and backplate for concealed attachment, satin finish.
 - 1. Product: Bradley 9334 manufactured by Bradley.
 - G. Toilet Paper Dispenser: Single roll, surface mounted bracket type
 - 1. Product: 5084 Single Roll Dispenser manufactured by Bradley.
 - H. Shower Curtain Rod: 1" diameter stainless steel, seamless construction with exposed surfaces in architectural satin finish.
 - 1. Product: Bradley model number 9530, 60" or 72" field verify actual dimensions.

PART 3 EXECUTION

- 3.1 EXAMINATION
 - A. Verify existing conditions before starting work.
 - B. Verify exact location of accessories for installation.
- 3.2 PREPARATION
 - A. Deliver inserts and rough-in frames to site for timely installation.
 - B. Provide templates and rough-in measurements as required.

3.3 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on the drawings.
- B. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

3.4 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION 10 2800

RESIDENTIAL APPLIANCES SECTION 11 3100

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Range Hood

- 1.2 RELATED REQUIREMENTS
 - A. Section 26 2717 Equipment Wiring: Electrical connections for appliances.
- 1.3 REFERENCE STANDARDS
 - A. UL (EAUED) Electrical Appliance and Utilization Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.4 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
- C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- 1.5 QUALITY ASSURANCE
 - A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
 - B. Electric Appliances: Listed and labeled by UL and complying with NEMA standards.

1.6 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.1 KITCHEN APPLIANCES

- A. Cooking Exhaust: Range hood in apartments
 - 1. Size: 30 inches
 - 2. Fan: Two- speed, 160 cfm
 - 3. Exhaust: Recirculating
 - 4. Features: Include cooktop light and removable grease filter.
 - 5. Finish: Stainless Steel
 - 6. Manufacturers:
 - a. Broan, Model BCDF 130SS, non ducted
 - b. Substitutions: See Section 01 6000 Product Requirements
- B. Cooking Exhaust: Range hood in Community Kitchen
 - 1. Size: 35-15/16 inches W x 19 ³/₄" D x
 - 2. Fan: Two- speed, 160 cfm
 - 3. Exhaust: Ducted
 - 4. Features: Include cooktop light and removable grease filter.
 - 5. Finish: Stainless Steel
 - 6. Manufacturers:
 - a. Broan, Model EW58 SERIES, ducted
 - b. Substitutions: See Section 01 6000 Product Requirements

PART 3 EXECUTION

3.1 INSTALLATION

A. Install Range Hood in accordance with manufacturer's instructions.

3.2 ADJUSTING

A. Adjust operating equipment to efficient operation.

3.3 CLEANING

- A. Remove packing materials from equipment.
- B. Wash and clean equipment.

END OF SECTION 11 3100

SECTION 12 2113 HORIZONTAL LOUVER BLINDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Horizontal slat louver blinds.
- B. Operating hardware.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

1.03 REFERENCE STANDARDS

A. WCMA A100.1 - Safety of Corded Window Covering Products; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the placement of concealed blocking to support blinds. See Section 06 1000.

1.05 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating physical and dimensional characteristics.
- C. Shop Drawings: Indicate opening sizes, tolerances required, method of attachment, clearances, and operation.
- D. Samples: Submit two samples, 4 inches long illustrating slat materials and finish, cord type and color.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Horizontal Louver Blinds Without Side Guides:
 - 1. Hunter Douglas;www.hunterdouglas.com.
 - 2. Levolor Contract; www.levolorcontract.com.
 - 3. Substitutions: See Section 01 6000 Product Requirements.

2.02 BLINDS WITHOUT SIDE GUIDES

- A. Description: Horizontal slat louvers hung from full-width headrail with full-width bottom rail.
- B. Manual Operation: Control of raising and lowering by cord with full range locking; blade angle adjustable by control wand.
- C. Metal Slats: Spring tempered pre-finished aluminum; square slat corners, with manufacturing burrs removed.
 - 1. Width: 1/2 inch.
 - 2. Thickness: 0.008 inch.
 - 3. Color: As selected by Architect.
- D. Slat Support: Woven polypropylene cord, ladder configuration.
- E. Head Rail: Pre-finished, formed aluminum box, with end caps; internally fitted with hardware, pulleys, and bearings for operation; same depth as width of slats.
- F. Headrail Attachment: Wall brackets.

2.03 FABRICATION

A. Determine sizes by field measurement.

- B. Fabricate blinds to fit within openings with uniform edge clearance of 3/8 inch.
- C. At openings requiring multiple blind units, provide separate blind assemblies with space of 3/8 inch between blinds, located at window mullion centers.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings are ready to receive the work.

3.02 INSTALLATION

- A. Install blinds in accordance with manufacturer's instructions.
- B. Secure in place with flush countersunk fasteners.

3.03 TOLERANCES

A. Maximum Variation of Gap at Window Opening Perimeter: 1/4 inch.

3.04 ADJUSTING

A. Adjust blinds for smooth operation.

3.05 CLEANING

A. Clean blind surfaces just prior to occupancy.

END OF SECTION

SPECIALTY CASEWORK SECTION 12 3530

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Casework in Kitchen and Bath Rooms.
- B. Miscellaneous countertops.

1.2 RELATED WORK

A. Coordinate with other prime and sub-contractors to assure proper incorporation of and provisions for items to be furnished or installed by them.

1.3 SUBMITTALS

- A. Submit shop drawings and catalog cuts showing layout, construction details and dimensions. Field verify all dimensions before proceeding with shop drawings and provide the field measurements with the shop draiwngs.
- B. Submit one (1) full size door sample, and 3 inch by 3 inch plastic laminate countertop samples.
- C. Submit color and finish charts for cabinets, plastic laminate, and wall backsplash.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials in accordance with manufacturer's recommendations, in original sealed containers, a minimum of four inches above grade, under cover, and protected from physical damage and effects of weather until required for use or installation.
- 1.5 MOCK-UP
 - A. Construct one (1) complete kitchen of each type as a mock-up before proceeding with the kitchen cabinet installation. There will be three (3) types of kitchens for the mock ups; Efficiency, One Bedroom, and One Bedroom UFAS.
 - B. Coordinate location of mock ups with the owner. If approved, the mock up will remain as completed work.

1.5 DESIGN REQUIREMENTS

- A. The residential cabinet design, sizes, style, details, and accessories specified in this Section and indicated on the drawings are based on the manufacturer listed and shall be considered as the standard of quality.
- B. The use of other acceptable manufacturers, whether listed or not, shall be considered subject to including the following information, in writing, with the bid submission:
 - 1. Manufacturer's name and system.
 - 2. The difference between manufacturer's systems.
 - 3. Expected or required alterations to the design, drawings, and details.
 - 4. Compliance to providing a complete functional and aesthetic system compatible with the project design and intent.
- C. All composite wood products (plywood, OSB, MDF, cabinetry) must be certified as compliant with California 93120 Phase 2. If using a composite wood product

that does not comply with California 93120 Phase 2, all exposed edges and sides must be sealed with low-VOC sealants, per Criterion 6.2

D. All adhesives and sealants (including caulks) must have VOC levels, in grams per liter, less than or equal to the thresholds established by the South Coast Air Quality Management District Rule 1168.

PART 2PRODUCTS

2.1 MANUFACTURERS

- A. Merillat Classic Portrait Square: Maple, factory painted white (listed as cotton by manufacturer).
 - 1. Comply with ANSVKCMA A161-1-1995 & HUD Minimum Property Standards-Housing 4910.1 9-8-86 para. 611-1-1
- B. Approved equal.
- 2.2 MATERIALS AND FABRICATION
 - A. FRONT FRAME: 3/4" Thick kiln dried solid hardwood. Mortise and tenon or bore and dowel construction frame joinery reinforced with glue and nail. Stiles 1 1/2" wide. Mulls 3" wide. Rails 1 3/4" wide. Stiles and top and bottom rails dadoed to receive ends, tops and bottoms.
 - B. END PANELS: Nominal 1/2" thick (12mm) multi-ply hardwood plywood with oak, maple or cherry veneer on exterior surface and birch veneer on interior surface. All end panels are constructed with the same dado joinery as above and are recessed 3/16".
 - C. TOP/BOTTOM PANELS: Nominal 1/2" thick (12mm) multi-ply hardwood plywood.Tops and bottoms set into grooved end panels, front rails and hang rails, glued and stapled. Bottoms are supported at rear of base cabinets by nominal 1/2" thick multi-ply hardwood plywood.
 - D. HANGING RAILS: Wall cabinets have nominal 3/4" thick (18mm) x 3" high multiply hardwood plywood, running full cabinet length at the top and bottom. Base cabinets have a nominal 1/2" thick (12mm) x 3" high multi-ply hardwood plywood hang rail at the top.
 - E. BACK PANEL: Nominal 1/8" thick (3mm), hardwood plywood. Securely glued and stapled to ends and hang rails.
 - F. SHELVES: Nominal 5/8" thick (15mm) multi-ply hardwood plywood, 10 7/8" deep with hardwood veneer banded front edge. Shelves are adjustable in all standard wall and base cabinets.
 - G. TOE KICK: Nominal 1/2" thick (12mm) multi-ply hardwood plywood.
 - H. BASE CORNER BRACES: High impact, injection molded plastic.
 - I. DOVETAIL DRAWER: Front, back and sides are nominal 3/4" thick (19 mm) solid beech hardwood with dovetail construction. Drawer bottoms are nominal 3/16" (5 mm) multi-ply hardwood birch plywood inserted into dado in front, back and sides. Drawer bottoms are glued and stapled to sides.
 - J. SOFT CLOSE UNDERMOUNT DRAWER GUIDE: High quality steel, undermount construction provides soft-close feature that helps reduce drawer slamming. Drawers are full extension, self adjusting in mounting brackets. Built-in stop, self-closing and stay closed features with a 100 lb. rated load capacity.
 - K. HINGES: High quality steel wrap-around hinge with self closing feature.

- L. FINISH: Furniture quality, factory paint finish on doors, drawer fronts, front frames, veneer plywood end panels, and all accessory and trim pieces.
- M. Door styles: Classic Portrait Square, slab drawer front
- N. See drawings for which cabinets to be UFAS/ ADA accessible. See drawings for counter and mounting heights.
- O. Provide pulls on all drawers and doors. Provide selection from manufacturers full range for approval by Owner.

2.3 COUNTERTOPS AND BACKSPLASHES

- A. Fabrication
 - 1. Substrate: Minimum 3/4 inch plywood
 - 2. High Pressure Laminate: Manufactured by Formica Laminate or Ralph Wilson Plastic Co. Commercial Collection (Wilson Art). Provide samples from manufacturer indicating the full range of colors and finishes available.
 - 3. Edge Treatment: Bullnose post formed edge with $\frac{3}{4}$ " radius at top of backsplash, $\frac{1}{4}$ " radius at cove of backsplash and countertop and $\frac{1}{2}$ " radius edge at front of countertop, 1-1/2" high and a return lip of 1-1/4".
 - 4. Top Thickness: Minimum 3/4".
 - 5. Backsplash Thickness: Minimum ³/₄" x 4" high unless noted otherwise.
 - 6. Apply sealer to all exposed edges of sink cut-outs.

PART 3 EXECUTION

- 3.1 EXAMINATION
 - A. Verify that conditions are acceptable and are ready to receive work.
- 3.2 PREPARATION
 - A. Verify location of existing wall blocking and securement points prior to mounting cabinets.
 - B. Verify plumbing, mechanical, and electrical locations and rough-ins prior to mounting cabinets and equipment.

3.3 INSTALLATION

- A. Secure cabinets to walls and countertops to cabinets.
- B. Install level, straight, plumb and true.
- C. Verify and coordinate final connections by plumbing, mechanical, and electrical contractors.
- D. Verify locations of removable base units and access panels with mechanical drawings.

3.4 CLEANING

A. Leave cabinets clean and in ready to use condition.

END OF SECTION 12 3530

SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

PART 1 GENERAL

1.1 SUMMARY

- A. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this Section.
- B. Plumbing Work shall consist of labor, materials and equipment required to furnish and install plumbing systems as specified and shown in the Contract Documents.

1.2 RELATED DIVISIONS

- A. Division 1: General Contracting and Administrative requirements.
- B. Division 7: Execution requirements for flashing and sheet metal specified under this contract including by not limited to roof flashing.
- C. Division 9: Execution requirements for painting specified under this contract including but not limited to painting of piping, access panels, hangers, supports, and equipment.
- D. Division 26: Execution requirements for wiring devices specified under this contract including by not limited to electric connections to equipment.

1.3 DOCUMENTS

- A. Nothing contained in these "SPECIFICATIONS" or shown on the "DRAWINGS" shall be so construed as to conflict with any local, municipal, State and Federal laws or regulations governing the installation of work specified herein. All such ordinances and regulations are hereby incorporated and made a part of these specifications. All such requirements shall be satisfied by the Contractor and at no additional cost to the Owner.
- B. Due to the small scale of drawings, it is not possible to indicate all pipe, fittings, supports, wiring and similar parts that may be required. Drawings are indicative of the character and scope of the work and are not intended to show all the details required to achieve an operable system. The Contract Drawings are diagrammatic and indicate the general arrangement of systems and work included in the Contract.
- C. The contractor shall investigate structural and finish conditions affecting the work and arrange all work accordingly, furnishing such items as may be required to meet building conditions. Do not scale the drawings. Consult the Architectural Drawings and Details for the locations of equipment. Where the same are not definitely located, obtain this information from the A/E.
- D. Contractor shall lay out work from dimensions of architectural and structural drawings and actual dimensions of equipment being installed. The exact location of all equipment, fixtures and specialties shall be determined at the site. The Drawings shall be carefully checked to insure that the equipment, as shown, will operate satisfactorily in the space allotted to it.

1.4 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- A. Submit under provisions of Division 1.
- B. The acceptance of Shop Drawings shall not relieve the Contractor from responsibility to furnish material, equipment, and systems and to perform work required by the Contract Documents. Neither the Owner nor the Architect will be responsible for errors or omissions on Shop Drawings furnished by the Contractor even though such Shop Drawings containing errors or omissions are inadvertently accepted.

1.5 **REFERENCE STANDARDS**

- A. The following reference standards and codes shall be referred to and applied to the Construction Documents as applicable. The specifications and drawings are designed to meet or exceed these references and codes and are incorporated into the specifications. All requirements shall be adhered to without additional cost to the Owner.
 - 1. ADA Americans with Disabilities Act
 - 2. AGA American Gas Association
 - 3. ANSI American National Standards Institute
 - 4. API American Petroleum Institute
 - 5. ASME American Society of Mechanical Engineers
 - 6. ASSE American Society of Sanitary Engineering
 - 7. ASTM American Society for Testing and Materials
 - 8. AWS American Welding Society
 - 9. ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers.
 - 10. AWWA American Water Works Association
 - 11. CISPI Cast Iron Soil Pipe Institute
 - 12. CGA Compressed Gas Association
 - 13. FM Factory Mutual Engineering Corporation
 - 14. IAMPO International Association of Plumbing and Mechanical Officials
 - 15. IFC International Fire Code
 - 16. IFGC International Fuel Gas Code
 - 17. IMC International Mechanical Code
 - 18. IPC International Plumbing Code
 - 19. IRI Industrial Risk Insurers
 - 20. L&I Pennsylvania Department of Labor & Industry
 - 21. MSS Manufacturers Standardization Society of the Valves and Fittings Industry
 - 22. NAIMA North American Insulation Manufacturers Association
 - 23. NEC National Electrical Code
 - 24. NEMA National Electrical Manufacturers Association
 - 25. NESC National Electric Safety Code
 - 26. NFPA National Fire Protection Association
 - 27. NSF National Sanitation Foundation
 - 28. OSHA Occupational Safety & Health Administration
 - 29. PDI Plumbing and Drainage Institute
 - 30. UL Underwriters Laboratories, Inc.
- B. Work shall meet or exceed all of the above standards and codes in addition to all federal, state local and municipal authority's laws and regulations as applicable.

- C. References made to codes and standards shall be taken to mean the latest edition, amendment, or revision of such reference in effect as of the date indicated on the Contract Documents unless otherwise noted.
- D. All equipment as part of this work shall be listed by the Underwriters' Laboratory when applicable.

1.6 COORDINATION OF WORK

- A. General Requirements: Refer to Division 1 Contract Modification Procedures, Payment Procedures, Administration Requirements, Field Offices and Storage Sheds, Vehicular Access and Parking, Public Safety, Temporary Barriers and Enclosures.
- B. Contractor shall coordinate work with that work being performed by other trades.
- C. Provide all labor, materials, tools, scaffolding and other equipment necessary to complete work in accordance with the drawings and specifications. The contractor will be responsible for the completion of all work included under this contract and shall employ skilled and qualified tradesmen for work.
- D. Provide structural steel members as required for support of equipment and materials furnished under this Division. Provide, for pipe, fixtures and associated equipment, all hangers and supports, as specified, detailed, or in accordance with industry standards.
- E. Equipment requiring plumbing connections shall be installed in accordance with equipment manufacturer's installation instructions. Obtain manufacturer's installation instructions prior to roughing-in and final connections.
- F. Where equipment is furnished by other trades for installation as Work under this Division, or where plumbing connections to equipment installed by others, is indicated as Work of this Division, obtain installation instructions from the respective contractor prior to roughing-in.
- G. Where equipment is indicated to be furnished as Work of this Division for installation by others, or where equipment furnished and installed under this Division requires connections or coordination by others, provide to the respective contractor(s) a copy of the installation instructions required for a complete installation.
- H. Where items under this contract are noted as "provided" it shall mean "furnished and installed".
- I. The bidder shall visit the site, determine existing conditions to be met, and verify the extent of required demolition, prior to submitting his proposal. The bidder shall be held responsible for the installation of the systems complete in every detail and shall verify and secure all measurements on the site.
- J. Drawings are diagrammatic and do not indicate all pipe, valves, fittings, etc., as required for all conditions. Verify exact location of equipment and installation requirements. Coordinate work with other trades so that interference between other trades and conduit, piping, ducts, architectural and structural equipment and materials will be avoided. Coordinate openings and recesses with the General Contractor.
- K. Materials or labor obviously required to fully complete the work shall be included, even though each item necessarily involved is not specifically mentioned or shown. Such work and materials shall be furnished and shall be of the same grade or quality as the

parts actually specified and shown. Should there be a conflict between the plans and Specifications, the greater quantity and better quality shall be provided.

- L. Should an overlap of work between the various trades become evident, the Engineer shall be notified. Such an event shall not relieve the Contractor of the responsibility for the work called for under this branch of the specifications until a written clarification or directive is issued concerning the matter.
- M. Related Work by Others:
 - 1. Unless otherwise stipulated under a specific Section of this Division, motor disconnects and starters shall be provided as work under Division 26, Electrical.
 - 2. Electric power wiring shall be included as work under the electrical wiring section of Division 26.
- N. Equipment Clearances and Requirements:
 - 1. For many items of equipment described in these Specifications, several manufacturers are listed. The first named in each instance is the make on which the layout was based and on which clearances, service required electrical, and plumbing characteristics, etc., have been checked. Additional manufacturers listed are considered acceptable.
 - 2. Due to the possibility of restrictions imposed by space limitations, the responsibility for resolving conflicts resulting from the use of equipment other than first named shall rest with the equipment supplier and the Contractor. Submittals for this equipment will be considered as a statement that clearances for access, service, maintenance, etc., have been checked and found adequate. Alternate equipment or the equipment of additional manufacturers named in these documents shall meet Base Bid Specifications. In the event such equipment or any equipment which the bidder proposes to furnish, deviates from the requirements of equipment first named regarding electric service, power wiring, control wiring, plumbing or piping, sound attenuation, ventilation, or vibration damping, it shall be the responsibility of the bidder to include in his price a sufficient sum to cover additional costs or charges resulting there from.

1.7 TEMPORARY FACILITIES AND CONTROLS

A. Refer to Division 1 for requirements related to Temporary Facilities and Controls.

1.8 TEMPORARY UTILITIES

- A. Refer to Division 1 for requirements related to Temporary Utilities.
- B. Temporary plumbing systems shall be installed as required to maintain continual service in accordance with the various phases of the project. The Contractor shall furnish and install all piping and equipment necessary to maintain and/or place in operation any portion of the building in accordance with the phasing schedule.
- C. The continuity of operation of existing facilities during construction of the new work shall be required. The actual length of time for an interruption shall be held to an absolute minimum. Any utility or system shut down shall be performed only after seven (7) days advance notice and written authorization from the Owner/Architect. If a utility or system requires an extensive shut down period of more than 2 hours, the shut down shall occur after hours or on weekends, and then only with written authorization from the Owner/Architect and without additional cost to the Owner. The Contractor shall submit a specific plan to the Owner/Architect detailing the nature and estimated duration of the interruption and the method of procedure. Do not proceed with an interruption of

service without the Owner's authorization.

- D. Any damage to Owner's materials and equipment due to the Contractor's work or utility interruptions shall be entirely the Contractor's responsibility.
- E. Where Owner finds excessive utility (i.e. gas, water and electricity) usage during the course of the work, the contractor shall share in the expenses as determined by the Owner and the Architect.

1.9 CUTTING AND PATCHING

- A. The Contractor shall be responsible for cutting and patching of existing walls, roofs, floors, and ceilings as required for the installation of his work. Refer to Division 1 for cutting and patching requirements.
- B. Coordinate all openings and recesses required for installation of work. Where openings and recesses are required in existing construction, they shall be provided as part of this work unless otherwise indicated.
- C. Where the General Contractor applies new finishes, the Plumbing Contractor shall patch and apply final substrate material only, except where noted otherwise.
- D. Where the General Contractor does not provide new finishes, a new finish shall be provided under the Plumbing Contract by a workman skilled in the trade involved and in a manner acceptable to the Architect, and shall match the adjacent finish. Where the new finish involves painting of the wall, the entire wall shall be painted. Finishes shall be approved by the Contract Administrator.
- E. Cutting and drilling of walls, slabs, and structural members required in conjunction with the work in this section, shall be done under the consent of the Contract Administrator. Beams, joists, etc. shall not be cut without written consent from the Contract Administrator. Work shall be neatly performed and only necessary material shall be removed. Holes and openings shall be located where they will not weaken the structure.
- F. Cutting and drilling of holes through masonry and concrete shall be performed using a core drill to minimize damage to such areas. Locations shall be accurately determined and checked, and the appropriate drill bit shall be used to minimize hole size.
- G. The Contractor shall be responsible for sawcutting interior concrete slabs as required for installation of new Plumbing Work. Where the slab is not specifically noted to be patched under another contract, the respective contractor shall patch the slab.
- H. The Contractor shall be responsible for sawcutting existing exterior pavement required for installation of new Plumbing Work. Where existing surfaces are not being resurfaced under another contract, the respective contractor shall patch the pavement to match the existing surface. Refer to Division 2.

1.10 PAINTING

- A. Refer to Division 9 for requirements related to Paints and Coatings. Architect shall select finish paint color
- B. Paint all exposed uninsulated piping located both inside and outside the structure. Galvanized pipe and fittings do not require painting.

- C. Paint all access panels and equipment installed under this Contract. Equipment furnished under this Division that is pre-painted or pre-finished by the manufacturer shall have all scratches, chips and rust spots cleaned, primed, and refinished.
- D. Paint all hanger assemblies, supports and anchors installed under this contract. Galvanized items do not require painting.
- E. Colors:
 - 1. Gas piping on roof, in mechanical and electrical rooms shall be painted yellow.
 - 2. Gas piping at meter shall be painted to match the meter.
 - 3. All other exposed piping shall be painted to match the adjacent wall or ceiling.
 - 4. Factory primed expansion tanks shall be painted to match the water heater.
 - 5. Access panels shall be painted to match adjacent wall or ceiling.
- F. Painting shall be inspected and approved by the Contract Administrator. Painting which does not meet the specifications and is not approved by the Contract Administrator must be stripped and painted again.

1.11 ALTERATIONS - PLUMBING

- A. Refer to Division 1 for requirements related to Additions and Alterations.
- B. Provide cutting and patching, and make all changes, relocations, and installation with minimum noise.
- C. Disconnect and remove all plumbing items as indicated for demolition. Store on site, as directed by the Owner, any plumbing items as determined by the Owner to be of any value. Remove all other plumbing items and dispose of off site. When an item is scheduled to be removed, it shall include, but not be limited to all associated piping, fittings, hangers, accessories, etc., and any associated foreign material such as plaster, block, etc.
- D. If any plumbing item is removed in the beginning or middle of an existing plumbing system, extend piping to remaining items in order to keep remaining items in current operating status. Extend existing piping using materials and methods compatible with existing. Existing piping that is disturbed in any way shall be retested and left in safe operating condition.
- E. Existing piping and accessories no longer required or utilized and located in accessible spaces, shall be disconnected and removed unless noted otherwise.
- F. Existing piping and accessories no longer required or utilized and concealed in walls, below floors, or above fixed ceilings and not interfering with new construction or remodeled work may remain and be abandoned. Piping to be abandoned shall be cut flush with wall/floor, capped at both ends and rendered dead. Surfaces shall be patched to conceal piping. If the partition, floor or ceiling is to be removed by the General Contractor, the abandoned/concealed pipe shall be disconnected under this contract. All exposed or accessible items scheduled to be removed shall be removed entirely.
- G. Items removed that leave behind openings or recesses shall be patched in accordance with Division 1 requirements for Cutting and Patching, subject to approval by the Contract Administrator.

- H. Items scheduled to be relocated shall be removed, cleaned and reinstalled in accordance with the manufacturer or in a similar manner in which it was installed, unless otherwise indicated.
- I. Clean and repair existing piping to be reinstalled.
- J. Temporarily remove existing ceilings in existing portions of the building as required for installation of new work, unless the General Contractor is scheduled to remove or replace same. Store materials in a safe, protected area and reinstall when work is complete. Any damaged pieces shall be replaced with same in kind at no additional cost to the Owner.
- K. Contractor shall take necessary steps to protect any existing ceilings from damage during installation of his work. If ceilings are removed, they shall be reinstalled in the same condition as they were prior to removal or shall be replaced at no expense to the Owner. Refer to Finish Schedule on Architectural Drawings for ceiling types.
- L. New work in finished spaces of existing building shall be installed concealed unless directed by the Architect/Engineer to be run exposed.
- M. Contractors shall thoroughly familiarize themselves with the project requirements and the existing building prior to submitting bid price, and shall have field measured and coordinated the installations between trades prior to submitting shop drawings. Contractor shall survey above ceilings in all areas where work will be performed prior to submitting bid price, to familiarize themselves with the working conditions for installation of new work and removal of existing work.
- N. Under no circumstances shall any equipment be hung, supported or suspended from the building existing plaster or other ceilings. Equipment, piping, specialties, etc., shall only be hung directly from the new or existing building structure (i.e. steel bar joist, truss system or concrete system).

1.12 PERMITS, FEES, AND INSPECTIONS

- A. Secure and pay all costs associated with state applications, notifications, permits, fees, testing and inspections as applicable to the work and include cost in the bid. Schedule inspections accordingly and provide copies to the Contract Administrator and Owner for their records.
- B. Unless specifically stated otherwise elsewhere in the Contract Documents the Contractor shall be responsible for all work including tap fees, meter fees, connection fees, installation fees, etc. and all associated costs, required by the utilities to connect to their service as part of the work under this contract. Verify requirements and coordinate installation with the utilities.
- C. Contractor shall comply with all gas, water and sewer requirements set forth by the authorities having jurisdiction.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Materials shall be new, free from scratches and dents, UL listed, FM approved and/or ASME rated, when applicable and come with standard warranties as applicable. Turn over warranties to Architect with operation and maintenance manuals.
- B. Materials shall be the latest model and use the most current technology as specified. Manufacturer's representative shall be available to provide parts instructions and maintenance manuals.
- C. All equipment requiring programming and/or system start up shall be completed by a qualified manufacturer's representative. All training, final connections, testing and system check out shall be completed by a qualified manufacturer's representative at no additional cost to the Owner.
- D. Protect all equipment and materials as furnished under this contract. Any discolored, broken or damaged items provided under this Contract shall be replaced at no additional cost to the owner as determined by the Contract Administrator.
- E. Products and test instruments used by the Contractor in testing the systems shall be accurately calibrated and maintained in good working condition. Products and test instruments used shall be provided by each respective Contractor and are subject to the approval of the Contract Administrator and the authority having jurisdiction.

2.2 ALTERNATES AND UNIT PRICES

A. Refer to Division 1 for a description of the Plumbing Contract Base Bid, Alternates and Unit Prices and the Bid Form.

2.3 PRODUCT REQUIREMENTS

A. Refer to Division 1 for Product Requirements: Reuse of existing material, product selection and options, spare parts and maintenance products, operation and maintenance (O&M) manuals, substitution procedures, submittal procedures, Owner supplied products, transportation and handling, storage and protection.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Provide all apparatus, equipment and appurtenances required to complete work under this Contract as shown on the drawings and specified herein.
- B. Obtain manufacturer's written instructions before installation or rough-in for work under this Contract and for installation or rough-in of work furnished by others and installed as part of this Contract. Manufacturer's instructions shall be obtained from approved shop drawings when applicable.
- C. Coordinate with other trades so that interference and delays are avoided. Obtain written information such as final connection dates and manufacturer's installation instructions from approved shop drawings from other contractors when plumbing work is required.
- D. Provide final plumbing connections and interconnecting piping to all equipment specified and/or shown on the drawings including equipment furnished and installed by others. The Contractor shall furnish and install all pipe, valves, fittings, supports and accessories required to provide a complete, operational system. All connections shall

be made to conform to the manufacturer's diagrams and instructions. Provide plumbing items required for the operation of equipment furnished under other contracts unless the equipment is specified to be furnished with such equipment.

- E. Provide a union or flange in the piping system at all equipment and devices requiring accessibility for repair. Unions shall be installed as to permit the removal of the item without disconnection of any piping except at the union.
- F. Verify rough-in before final connection. Verify correct operation after final connection and make corrections and adjustments as required.
- G. Verify equipment, fixture and piping requirements before final connection. Verify correct operation after final connection and make corrections and adjustments as required.
- H. Piping shall not be installed above or within 36 inches of electrical panels or electrical equipment. The Contractor shall coordinate installation of piping near these items with the Electrical Contractor and comply with the requirements set forth in NFPA 70.
- I. No piping other than piping from an elevator sump pump shall be installed in an elevator shaft, or elevator machine room.

3.2 PROTECTION AND CLEAN UP

- A. Plumbing equipment, fixtures, and piping, both new and existing, shall be protected from damage, dirt, dust, moisture, dents, scratches, paint overspray, etc., during all phases of construction. Leave protective coverings in place until substantial completion is made or per Contract Administrator's direction. Stock piled pipe, valves, fittings, etc., shall be placed on dunnage and protected from weather and from entry of foreign material.
- B. Remove all dust, dirt, markings and all foreign material from all fixtures, specialties and equipment before final completion of the project. Work shall be inspected and approved by the Contract Administrator.
- C. Contractor shall take necessary steps to protect the building and all interior finishes from damage during the installation of his work. All equipment, furniture, floors, walls, etc., shall be adequately protected from dust, dirt, paint overspray, welding spatters, cutting oil, metal filings, etc. caused by the work. Protection shall include required temporary barriers and coverings.
- D. The Contractor shall not interfere with the operation of the building by allowing debris, etc., to remain on the premises. At a minimum, Contractor shall vacuum for removal of plaster, dust, etc., in the building at the end of each working day.

3.3 CONSTRUCTION SCHEDULE AND PHASING

A. Refer to the Construction Schedule.

3.4 CLOSEOUT PROCEDURE

A. Refer to Division 1 for Closeout Procedures: Substantial completion, Final acceptance, Terminal inspection, Record document submittals, Release of liens, Project closeout submittals (warranties and bonds). B. All materials and workmanship under this Contract as specified herein shall be warranted for one year after the final acceptance date of completion, except where equipment is specified with longer warranties. If faulty material and/or workmanship is discovered within the warranty period (not including misuse or abuse of equipment by the Owner), the faulty material and workmanship shall be replaced, including labor, at no additional cost to the Owner.

3.5 EMERGENCY REPAIRS

A. The Owner reserves the right to make emergency repairs to protect equipment and systems in operation without voiding the Contractor's guarantee bond or relieving the Contractor of his responsibility during the bonding period.

3.6 PROVISIONS FOR LATER INSTALLATIONS

- A. Where work cannot be installed as the structure is being erected, the Contractor for such work shall provide and arrange for the building-in of boxes, sleeves, inserts, fixtures, and devices necessary to permit installation of the omitted work during later phases of construction. The Contractor shall arrange for layout, chases, holes, and other openings, which must be provided in masonry, concrete, and other work.
- B. The Contractor shall be responsible for becoming informed of the nature and arrangement of the materials and construction to which his work attached or passes through.

3.7 SUPERVISION AND COOPERATION

A. Work done by the Contractor under this Division shall include the services of an experienced superintendent, who shall be constantly in charge of the work. The superintendent, together with qualified journeymen, helpers, and laborers shall be required to properly unload, install, connect, adjust, start, operate, and test the work involved, including related equipment and materials furnished under other contracts or by the Owner.

END OF SECTION

SECTION 22 07 19

PLUMBING PIPING INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes thermal insulation for piping systems including vapor retarders, jackets and accessories; and through penetration firestops.
- B. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this Section.

1.2 REFERENCES

- A. American Standards for Testing and Materials
 - 1. ASTM C534 Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
 - 2. ASTM C547 Standard Specification for Mineral Fiber Preformed Pipe Insulation.
 - 3. ASTM C585 Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).
 - 4. ASTM C1136 Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
 - 5. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 6. ASTM E814 Test Method for Fire Tests of Through-Penetration Firestops.
 - 7. ASTM E795 Standard Practices for Mounting Test Specimens During Sound Absorption Tests.
 - 8. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
 - 9. ASTM G22 Determining Resistance of Plastics to Bacteria.
- B. NAIMA (North American Insulation Manufacturers Association) National Insulation Standards.
- C. Underwriters Laboratories Inc.
 - 1. UL 723 Standard for Safety Test for Surface Burning Characteristics of Building Materials
 - 2. UL 1479 Fire Tests of Through Penetration Firestops.

1.3 SUBMITTALS

- A. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location. Show typical firestop system details including method of installation.
- B. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three years' experience.

1.5 PERFORMANCE

A. Insulation materials shall meet the thermal conductivity and minimum thickness requirements of the International Energy Conservation Code and ASHRAE 90.1.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer for tapes, adhesives, mastics, and cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.1 PIPE INSULATION AND ACCESSORIES

- A. Manufacturers:
 - 1. Knauf.
 - 2. Owens Corning.
 - 3. Johns-Manville.
 - 4. NOMACO.
 - 5. Proto Corp. (Fitting Covers)
 - 6. Rubatex Corp. (Elastomeric Foam Insulation).
 - 7. Armstrong (Elastomeric Foam Insulation Only).
 - 8. IMCOA (Elastomeric Foam Insulation).
 - 9. Substitutions: Section 016000 Product Requirements.
- B. Mineral Fiber Pipe Insulation: ASTM C547, Type 1, heavy density molded one piece, maximum temperature 1000 degrees F. ASTM C585 for sizes.
 - 1. Thermal Conductivity (K value) of 0.23 at 75 degrees F Mean temperature.

- 2. ASJ/SSL jacketing conforming to ASTM C1136, Type I, with a maximum vapor transmission rating of 0.02 perms. Jacketing is a scrim reinforced white kraft and foil laminate.
- 3. Adhesives and sealants shall have low VOC content.
- 4. Shall not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with UL 723.
- C. Elastomeric Foam: ASTM C534, flexible, cellular elastomeric, molded or sheet.
 - 1. Thermal Conductivity (K value) of 0.255 at 75 degrees F Mean temperature.
 - 2. Maximum service temperature of 220 degrees F.
 - 3. Maximum flame spread of 25; up to and including 3/4 inch thickness; per ASTM E84. Maximum smoke developed of 50; up to and including 3/4 inch thickness; per ASTM E84.
 - 4. Connection using waterproof, vapor retarder adhesive as needed.
 - 5. UV protection using outdoor grade protective coating; Halstead Protective Coating 67 x 944, or Rubatex 374 coating.
- D. Fitting Insulation:
 - 1. UV resistant, PVC fitting cover, white or colored. Fitting cover system shall consist of pre-molded, high impact PVC material with preformed mineral fiber insert. Insert material shall be equal in thickness and composition as adjoining insulation.
 - 2. Maximum flame spread of 25, Maximum smoke developed of 50, per ASTM E84.
 - 3. Closures: Stainless steel tacks, matching PVC tape, or PVC adhesive as recommended by manufacturer.
- E. Field Applied Jackets.
 - 1. UV resistant, PVC jacketing and accessories, white or colored.
 - 2. Maximum flame spread of 25, Maximum smoke developed of 50, per ASTM E84.
 - 3. Closures: Stainless steel tacks, matching PVC tape, or PVC adhesive as recommended by manufacturer.

2.2 THROUGH PENETRATION FIRESTOP SYSTEMS

- A. Manufacturers:
 - 1. Nelson Firestop Products.
 - 2. 3M Brand Fire Protection Products.
 - 3. Metacaulk.
 - 4. Tremco.
 - 5. Substitutions: Section 016000 Product Requirements.
- B. Description:
 - 1. Only firestop products that have been third party tested in accordance with UL 1479 and ASTM E814 for specific fire rated construction penetrations shall be considered and used. Items shall be tested to specific parameters including the type and numbers of penetrating items, the size of the penetrating items, the maximum allowable annular space, and the rated hourly requirement of the structure.

2. Maintain effective barrier against flame, smoke, gasses and water per ASTM E814 and UL 1479.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify piping and equipment has been tested before applying insulation materials.
- B. Verify surfaces are clean and dry, with foreign material removed.
- C. Examine surfaces to receive penetration sealant or foam and report unacceptable conditions to the Architect before starting firestopping work. Start of work indicates firestopping installer's acceptance of sizing of holes and application conditions.
- D. Verify that penetration holes are sized to allow for the proper annular spacing required for the firestop system being installed. Each trade must control sizing of their penetration holes made to accommodate their penetrating items.

3.2 PREPARATION

- A. All piping and equipment to receive insulation shall be pressure tested prior to installing insulation.
- B. Surfaces to receive insulation shall be clean and dry prior to installing insulation.
- C. Insulation shall be dry before and during installation. Wet or damaged insulation shall be discarded.
- D. Clean penetration holes of dirt, loose materials, and foreign matter that may affect bond or installation of firestop system. Remove coatings such as paint, curing compounds, water repellent, and sealers as required.

3.3 INSTALLATION

- A. Install in accordance with NAIMA National Insulation Standards.
- B. Exposed Piping: Locate insulation and cover seams in least visible locations.
- C. Insulated pipes conveying fluids above or below ambient temperature:
 - 1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
 - 2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factoryapplied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
 - 3. Insulate fittings, joints, and valves with premolded insulation of like material and thickness as adjacent pipe. Finish with PVC fitting covers. Square cornered, mitered joints at elbows will not be permitted.

D. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions. Provide through penetration firestop for penetrations of assemblies with fire resistance rating greater than one hour.

3.4 THROUGH PENETRATION FIRESTOP INSTALLATION

- A. Install firestopping materials, including forming, packing, and other accessory materials to fill openings around mechanical and electrical services penetrating floors and walls to provide firestops with fire resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.
- B. Install firestopping materials systems in strict accordance with manufacturer's installation instructions and code requirements.
- C. Employ installation techniques which will ensure that firestopping is deposited to fill and seal holes and openings.
 - 1. Provide flame (F) rating minimum one hour, but not less than fire resistance rating of the assembly in which installed, per ASTM E814.
 - 2. Ensure effective smoke seal.
 - 3. Tool exposed surfaces of applied sealant smooth.
- D. Clean surfaces adjacent to sealed joints free of excess sealant and soiling from this work as work progresses, using solvent or cleaning agent recommended in writing by the sealant manufacturer.

3.5 PIPING INSULATION SCHEDULE

Piping Service	Pipe Size	Insulation Type	Thickness
Domestic Water	All sizes	Mineral Fiber or Elastomeric Foam	1"

END OF SECTION

SECTION 22 11 16

DOMESTIC WATER PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes domestic water piping, valves, fittings, testing, disinfection, access doors and accessories.
- B. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this Section.
- C. Related Sections and Divisions:
 - 1. Section 220529 Hangers and Supports for Plumbing Piping and Equipment: Product requirements for supports, hangers, anchors, sleeves and sealing for placement by this Section.
 - 2. Section 220553 Identification for Plumbing Piping and Equipment: Product requirements for pipe identification and valve tags for placement by this Section.
 - 3. Section 220719 Plumbing Piping Insulation: Product requirements for thermal pipe insulation for placement by this Section.
 - 4. Division 26: Execution requirements for wiring specified by this section.

1.2 REFERENCES

- A. American National Standards Institute
 - 1. ANSI Z21.22 Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems
 - 2. ANSI/NSF 61 Drinking Water System Components.
- B. American Society of Mechanical Engineers
 - 1. ASME B16.18 Cast Copper Alloy Solder Joint Pressure Fittings.
 - 2. ASME B16.22 Wrought Copper and Bronze Solder Joint Pressure Fittings.
 - 3. ASME B16.24 Cast Copper Alloy Pipe Flanges and Flanged Fittings.
 - 4. ASME B16.26 Cast Bronze Fittings for Flared Copper Tubes.
 - 5. ASME B31.9 Building Service Piping.
 - 6. ASME Section IV Boiler and Pressure Vessel Code Rules for Construction of Heating Boilers.
- C. American Society of Sanitary Engineering
 - 1. ASSE 1017 Temperature Actuated Mixing Valves for Hot Water Distribution Systems.
- D. American Standards for Testing and Materials
 - 1. ASTM B32 Solder Metal.
 - 2. ASTM B88 Seamless Copper Water Tube.
 - 3. ASTM B813 Liquid and Paste Fluxes for Soldering Applications of Copper and Copper Alloy Tube.
 - 4. ASTM B828 Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings.
- E. Manufacturers Standardization Society of the Valve and Fittings Industry
 - 1. MSS SP-80 Bronze Gate, Globe, Angle and Check Valves.

2. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

1.3 SUBMITTALS

A. Product Data: Submit data on pipe materials, fittings, valves and accessories. Submit manufacturers catalog information. Indicate valve data and ratings.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of valves and equipment.
- B. Operation and Maintenance Data: Submit spare parts list, exploded assembly views and recommended maintenance intervals.
- C. Submit written documentation that system has been flushed, disinfected, tested, and approved. Provide copies of third party potable water tests for each phase of construction.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the International Plumbing Code and all applicable codes, Pennsylvania Department of Labor and Industry standards, and the authority having jurisdiction.
- B. Copper press fittings shall be installed using the proper tool, actuator, jaws and rings as instructed by the press fitting manufacturer.

1.6 PERFORMANCE REQUIREMENTS

- A. Provide components and installation capable of producing domestic water piping systems with the following minimum working pressure ratings, unless noted otherwise.
 - 1. Domestic Water Distribution Piping: 125 psig.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three years documented experience. Installer shall be a qualified installer, licensed within the jurisdiction, and familiar with the installation of systems specified in this Section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves and equipment on site in original shipping containers with labeling in place and legible. Inspect for damage.
- B. Store materials off ground on platforms with protective covering.
- C. Provide temporary protective coating on cast iron and steel valves.
- D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

- E. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- F. Handle materials so as not to mark or damage finishes.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.10 WARRANTY

A. Furnish one year manufacturer's warranty on domestic water system components unless specified otherwise.

PART 2 PRODUCTS

2.1 WATER PIPING, ABOVE GRADE

- A. Copper Tubing: ASTM B88, Type L, hard drawn.
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze, solder ends. Joints: ASTM B828 soldered; ASTM B32 soldered, Grade 95TA; ASTM B813 flux. Solders and fluxes shall be "lead free" (less than 0.2 percent lead).
 - 2. Fittings: Press fittings with factory installed EPDM sealing elements. Fitting shall be warranted for 50 years. Joints shall be made with a mechanical press tool. Push to connect joints shall not be permitted.
 - 3. Fittings 2 inch to 8 inch. ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze, grooved ends. Joints: Grooved mechanical couplings. Pipe shall not be expanded to accept IPS coupling. Coupling shall be rigid style and be provided with NSF 61 approved EPDM gasket.

2.2 FLANGES, UNIONS, AND COUPLINGS

- A. Manufacturers:
 - 1. Watts Industries, Inc., Series 3000.
 - 2. Substitutions: Section 016000 Product Requirements.
- B. Pipe size 2 inches and under:
 - 1. Ferrous Pipe: ASME B16.39, Class 150 malleable iron threaded unions.
 - 2. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.
 - 3. Dielectric Connections: ASME B16.39, union with galvanized or plated steel threaded end by copper soldered end, water impervious isolation barrier.
- C. Pipe size over 2-1/2 inches and larger:
 - 1. Ferrous Pipe: ASME B16.42, Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
 - 2. Copper Tube and Pipe: ASME B16.24, Class 150 slip-on bronze flanges; preformed neoprene gaskets.
 - 3. Dielectric Connections: ASME B16.42, Class 150 threaded galvanized forged steel flange by soldered bronze flange, gasket suitable for water, air, oil, natural gas, and propane.

2.3 BALL VALVES

A. Ball valves up to and including 2 inches:

- 1. Manufacturers:
 - a. Apollo, Model 77-200 or 77-100.
 - b. Nibco, Model S-585-70 or T-585-70.
 - c. Hammond Valve, Model 8311 or 8301.
 - d. Substitutions: Section 016000 Product Requirements.
- 2. MSS SP-110, Class 150, 600 psi, bronze, two piece body, chrome plated brass ball, full port, Teflon seats and stuffing box ring, blow-out proof stem, lever handle, soldered or threaded ends.
- 3. Provide valve extensions for valves on insulated piping.
- B. Ball valves 2-1/2 to 3 inches:
 - 1. Manufacturers:
 - a. Apollo, Model 70-200 or 70-100.
 - b. Nibco, Model S-580-70 or T-580-70.
 - c. Hammond Valve, Model 8511 or 8501.
 - d. Substitutions: Section 016000 Product Requirements.
 - 2. MSS SP-110, Class 150, 400 psi, bronze, two piece body, chrome plated brass ball, conventional port, Teflon seats and stuffing box ring, blow-out proof stem, lever handle, soldered or threaded ends.
 - 3. Provide valve extensions for valves on insulated piping.

2.4 BALANCING VALVES

- A. Balancing Valve (at circulator pump and mixing valve)
 - 1. Manufacturers:
 - a. Bell & Gossett, Circuit Setter Plus.
 - b. Taco, Accu-flo.
 - c. Tyco Grinnel, Model CB800
 - d. Substitutions: Section 016000 Product Requirements.
 - 2. Construction: Class 125, Lead free, brass or bronze body, brass ball, TFE seats, temperature and pressure test plug on inlet and outlet, combination blow-down or back-flush drain, memory stop, and calibrated nameplate, soldered or threaded ends. Valve shall be designed for positive shutoff.
 - 3. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control, minimum pressure no more than 5 psi.
- B. Thermostatic Balancing Valve (at risers)
 - 1. Manufacturers:
 - a. ThermOmegaTech, Circuit Solver CSUAS-xx-120-CV1
 - b. Substitutions: Section 016000 Product Requirements.
 - 2. Construction: Lead free, stainless steel, self-contained, fully automatic balancing valve, with integrated union, strainer, ball valves and check valve. 120 degree closing temperature.

2.5 SWING CHECK VALVES

- A. Swing check valves up to and including 3 inches:
 - 1. Manufacturers:
 - a. Nibco, Inc., Model S-413 or T-413.
 - b. Stockham.
 - c. Tyco Grinnell, Model 590.
 - d. Substitutions: Section 016000 Product Requirements.

2. MSS SP-80, Class 125, bronze body and cap, bronze swing disc with rubber seat, wye pattern, soldered or threaded ends.

2.6 RELIEF VALVES

- A. Manufacturers:
 - 1. Watts Regulator.
 - 2. Conbraco Industries, Inc.
 - 3. Substitutions: Section 016000 Product Requirements.
- B. Temperature and Pressure Relief: AGA Z21.22 certified, lead free bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 210 degrees F, pressure range 75 150 psi, NPT inlet x NPT (drain) outlet, ASME SEC IV certified and labeled. Watts series LF_40.
- C. Vacuum Relief: AGA Z21.22, AGA Certified. Watts series N36.

2.7 THERMOMETERS

- A. Manufacturers:
 - 1. Trerice.
 - 2. Weiss Instruments.
 - 3. Substitutions: Section 016000 Product Requirements.
- B. 9 inch angle thermometer, Fahrenheit range, 30 to 240 degrees F.

2.8 THERMOSTATIC MIXING VALVES - BUILDING MASTER (TMV-1)

- A. Manufacturers:
 - 1. Leonard Valve Co., Model TM-186-2020B-LF-DT
 - 2. Lawler.
 - 3. Symmons.
 - 4. Acorn
 - 5. Substitutions: Section 016000 Product Requirements.
- B. Valve:
 - 1. Large thermostatic water mixing valve.
 - 2. Small thermostatic water mixing valve.
 - 3. Solid bimetal thermostat, color coded dial.
 - 4. Adjustable limit stop set for 120 degrees F.
 - 5. 2 inch inlets, 2 inch outlet.
 - 6. Pressure regulating valve with pressure gauges.
 - 7. Rough bronze finish.
 - 8. Valve shall conform to ASSE 1017.
- C. Capacity: 113 gpm at 10 psi differential.
- D. Accessories:
 - 1. Inlets with angle checkstops.
 - 2. Outlet ball valve shutoffs.
 - 3. Color coded dial thermometer, 0 to 140 degrees F.

- E. Factory preassembled and tested. Installed and piped according to manufacturer's instructions.
- F. Warranty: Provide a seven year manufacturer's warranty.

2.9 FIRE RATED ACCESS DOORS (AD)

- A. Manufacturers:
 - 1. Milcor
 - 2. Larsen's Manufacturing Co.
 - 3. J. L. Industries, Inc.
 - 4. Substitutions: Section 016000 Product Requirements.
- B. Construction: 20 gauge cold rolled steel sandwich panel door with 16 gage steel frame, keyoperative lock, factory applied prime coat of rust inhibitive paint, minimum size 16 x 16 inches. Frame and anchors shall be type required for installation in opening. Fire rating shall be equal to or greater than adjacent construction.

PART 3 EXECUTION

3.1 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION

- A. Install water piping in accordance with ASME B31.9 and AWWA C600.
- B. Construct a complete domestic water system, generally as indicated on the Drawings. Approximate invert elevations and grades of major lines are indicated on the Drawings. Contractor shall field check all such information before proceeding with his work.
- C. Install non-conducting dielectric connections wherever jointing dissimilar metals.
- D. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- E. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.
- F. Group piping whenever practical at common elevations.
- G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- H. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 220719.
- I. Provide access where valves are not exposed. Coordinate size and location of access doors and panels with drawings.
- J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- K. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Division 9.
- L. Install valves with stems upright or horizontal, not inverted.
- M. Install check valves in horizontal line or in vertical line with upward flow. Do not install in vertical line with downward flow.
- N. Sleeve pipes passing through partitions, walls and floors.
- O. A factory trained grooved coupling representative shall periodically visit the jobsite to insure the proper field grooving and grooved product installation procedures are being followed. The contractor shall remove and replace any improperly installed grooved mechanical products and the factory trained representative shall provide additional training to mitigate future installation errors.

3.3 THERMOSTATIC MIXING VALVE INSTALLATION

- A. Install thermostatic mixing valve in accordance with manufacturer's instructions.
- B. Verify exact piping arrangement of thermostatic mixing valve with actual product being installed. Note: Different manufacturers of many valves recommend different ways of piping the unit. Contractor is required to pipe all piping, including hot water recirculation piping, per manufacturer's printed instructions.
- C. Provide hot water hose bibb on outlet of thermostatic mixing valve for use in balancing the valve. Manufacturer's representative shall adjust and provide written verification to Engineer that the system is piped and balanced per the manufacturer's printed instructions.

3.4 PIPING EXPANSION COMPENSATION

- A. Provide structural work, support and equipment required for controlling expansion and contraction of piping. Provide anchors, guides, loops, offsets, and swing joints or expansion joints where required and as indicated on Drawings. Verify system is adequately protected.
- B. Expansion Compensation Design Criteria:
 - 1. Installation Temperature: 50 degrees F.
 - 2. Operation Temperature:
 - 3. Domestic Hot Water Supply and Return: 140 degrees F.
 - 4. Safety Factor: 30 percent.
- C. Provide expansion compensation every 100 feet maximum of straight pipe run.
- D. Expansion loops shall be sized for actual expansion requirements, pipe size and material. Loops shall be cold sprung during installation.

3.5 INTERFACE WITH OTHER PRODUCTS

A. Install unions or flanges at equipment or apparatus connections.

- B. Install ball valves for shut-off, bypass, and to isolate equipment, part of systems, or vertical risers.
- C. All fixtures, specialties and equipment shall be provided with individual shutoffs.
- D. Install balancing valves for throttling or manual flow control.
- E. Provide balancing valves in water circulating systems on all return branches and where indicated on the Drawings.
- F. Provide valve tags and directory chart as specified in Section 220553.
- G. All stop valves over 2 inches pipe size on supply, circulating, or return lines connected to water heaters shall be of the outside screw and yoke (OS&Y) rising spindle type as required by the authority having jurisdiction. Ball valves may be used where approved by local authority.
- H. Where piping is insulated, ball valves shall be equipped with 2 inches extended handles of non-thermal conductive material and protective sleeve that allows operation of the valve without breaking the vapor seal or disturbing the insulation.

3.6 ERECTION TOLERANCES

A. Slope piping where practical, a minimum 0.25 percent to allow complete drain down of system. Install drain valves at low points of system and at connections to equipment.

3.7 CLEANING AND FLUSHING

- A. Cleaning: All pipe shall be wiped clean to remove any oil, glue, dirt etc that may have accumulated on the pipe during construction.
- B. Flushing:
 - 1. Prior to disinfecting system or making final connections to fixtures, specialties and equipment, the entire system shall be thoroughly flushed to remove all pipe filings and fragments present due to cutting and drilling of pipe and to remove any rocks or debris that may have entered the system during installation of the water service.

3.8 DISINFECTING OF DOMESTIC WATER SYSTEM

- A. Prior to starting work, verify system is complete, flushed and clean.
- B. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder and tablet or gas form, throughout system to obtain residual from 50 to 80 mg/L.
- D. Bleed water from outlets to obtain distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. When final disinfectant residual tests less than 25 mg/L, repeat treatment.

- G. Flush disinfectant from system until residual concentration is equal to incoming water or 1.0 mg/L.
- H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and have analyzed by an independent testing laboratory in accordance with AWWA C651. Submit report to owner.
- I. The procedure shall be repeated where shown by a bacteriological examination that contamination remains present in the system.
- J. The Architect/Engineer and Owner reserve the right to have the domestic water system analyzed again at any time prior to final acceptance of the Work. If found unsafe, the contractor is required to re-disinfect the system in accordance with this Section.

3.9 TESTING

- A. Test all systems in its entirety or in sections. Tests shall be performed before insulating, backfilling or in any way concealing the piping system. All tests shall conform to the requirements of the local Plumbing Code and/or State Codes having jurisdiction over the installation.
- B. Subject all piping to hydrostatic pressure test of 50 pounds per square inch above system working pressure but not less than 85 pounds per square inch without exceeding the pressure rating of the system. System shall remain at the test pressure for not less than 4 hours with no pressure drop. Inspect all joints for leaks. Correct all leaks and retest until no leaks are evident. Air pressure test may be used, conforming to requirements of authority having jurisdiction. All tests shall be conducted in the presence of the Plumbing Inspector.

END OF SECTION

SECTION 22 13 16

SANITARY WASTE AND VENT PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes sanitary waste and vent piping, fittings.
- B. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this Section.

1.2 REFERENCES

- A. American Standards for Testing and Materials
 - 1. ASTM D1785 Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120.
 - 2. ASTM D2564 Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.
 - 3. ASTM D2665 Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
 - 4. ASTM D2855 Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
- B. International Code Council International Plumbing Code.

1.3 SUBMITTALS

- A. Section 016000 Product Requirements: Submittal procedures.
- B. Product Data: Submit data on pipe materials, fittings, and accessories.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the International Plumbing Code, Pennsylvania Department of Labor and Industry standards, and the authority having jurisdiction.

1.5 QUALIFICATIONS

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

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 Product Requirements: Product storage and handling requirements.
- B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.7 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.8 WARRANTY

- A. Division 1 Closeout Procedures: Product warranties and product bonds.
- B. Furnish one year manufacturer's warranty on sanitary waste and vent system components unless specified otherwise.

PART 2 PRODUCTS

2.1 SANITARY WASTE AND VENT PIPING, ABOVE GRADE

- A. PVC Pipe: ASTM D2665, Schedule 40 Solid Core.
 - 1. Fittings: ASTM D2665, PVC.
 - 2. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement.
 - 3. Note: Use PVC pipe and fittings only if permitted by local code. "Foam Core" shall not be permitted. PVC pipe and fittings shall not be used in the kitchen areas or mechanical rooms where waste water temperatures may exceed 140 degrees F. PVC pipe and fittings are not permitted in return air plenums.

2.2 INDIRECT DRAIN

- A. Copper Tube: ASTM B306, DWV, ASTM B75, ASTM B88, ASTM B251, Type L.
 - 1. Fittings: ASME B16.23, cast bronze, or ASME B16.29, wrought copper.
 - 2. Joints: ASTM B828 soldered using ASTM B32 lead free solder, Grade 50B, and ASTM B813 flux.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: Coordination and project conditions.

3.2 INSTALLATION

- A. Provide cleanouts at each change of direction greater than 45 degrees, at the base of all stacks, and a minimum of every 100 feet of horizontal run. Refer to Section 221319.
- B. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- C. Install piping to maintain headroom. Do not spread piping, conserving space.
- D. Group piping whenever practical at common elevations.
- E. Install bell and spigot pipe with bell end upstream.

3.3 ERECTION TOLERANCES

A. Establish invert elevations. Slopes for drainage are a minimum 1/4 or 1/8 inch per foot as indicated on the Drawings. Maintain gradients.

3.4 TESTING

A. Test all systems in its entirety or in sections. Tests shall be performed before insulating, backfilling or in any way concealing the piping system. All tests shall conform to the requirements of the local Plumbing Code and/or State Codes having jurisdiction over the installation.

END OF SECTION

SECTION 22 20 23

FACILITY NATURAL GAS PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes pipe, pipe fittings, valves, and testing.
- B. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this Section.
- C. Related Sections:
 - 1. Section 220529 Hangers and Supports for Plumbing Piping and Equipment.
 - 2. Section 220553 Identification for Plumbing Piping and Equipment: Product requirements for valve and pipe identification for placement by this Section.
 - 3. Division 26: Execution requirements for electric connections specified by this Section.

1.2 REFERENCES

- A. AGA 3-88 Manual Valves for Indoor Piping Systems.
- B. American Society of Mechanical Engineers
 - 1. ASME Section VIII Pressure Vessels.
 - 2. ASME Section IX Welding and Brazing Qualifications.
 - 3. ASME B1.20.1 Pipe Threads, General Purpose
 - 4. ASME B16.3 Malleable Iron Threaded Fittings.
 - 5. ASME B16.11 Forged Steel Fittings, Socket-Welding and Threaded.
 - 6. ASME B16-44 Manually Operated Metallic Gas Valves for Use in House Piping Systems.
 - 7. ASME B31.1 Power Piping.
 - 8. ASME B31.2 Fuel Gas Piping.
 - 9. ASME B31.9 Building Service Piping.
 - 10. ASME B36.10 Welded and Seamless Wrought Steel Pipe.
- C. American Standards for Testing and Materials
 - 1. ASTM A53 Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.
 - 2. ASTM A105 Forgings, Carbon Steel for Piping Components.
 - 3. ASTM A234/A234M Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.
- D. American National Standards Institute
 - 1. ANSI Z21.15 Manually Operated Gas Valves for Appliances, Appliance Connectors, and Hose End Valves.
 - ANSI LC-I / CSA 6.26 Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST).
- E. American Welding Society
 - 1. AWS A5.8 Brazing Filler Metal.
 - 2. AWS D1.1 Structural Welding Code.

- F. AWWA C105 (American Water Works Association) Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids.
- G. International Code Council
 - 1. International Fuel Gas Code.
 - 2. International Mechanical Code.
 - 3. International Plumbing Code.
- H. Manufacturers Standardization Society
 - 1. MSS SP-71 Cast Iron Swing Check Valves, Flanged and Threaded Ends.
 - 2. MSS SP-80 Bronze Gate, Globe, Angle and Check Valves.
- I. National Fire Protection Association
 - 1. NFPA 54 National Fuel Gas Code.

1.3 SUBMITTALS

- A. Section 016000 Product Requirements: Submittal procedures.
- B. Product Data: Submit data on pipe materials, pipe fittings, valves and accessories. Submit manufacturers catalog information. Indicate valve data and ratings.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- D. Certifications: Submit written documentation that each installer has been trained and certified by an independent testing laboratory in the welding procedure being performed.

1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of valves, piping system, storage tanks, and system components.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the International Fuel Gas Code, NFPA 54, the Pennsylvania Department of Labor and Industry standards, and the authority having jurisdiction.
- B. Perform Work in accordance with ASME B31.1, ASME B31.2, ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.
- C. Perform Work in accordance with applicable authority and AWS D1.1 for welding hanger and support attachments to building structure.

1.6 QUALIFICATIONS

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

1.7 PERFORMANCE REQUIREMENTS

- A. Fuel service piping and service regulators: 225 psi minimum.
- B. Fuel distribution piping: 125 psi minimum.

1.8 PRE-INSTALLATION MEETING

A. Convene minimum one week prior to commencing Work of this Section. Coordinate location of piping, valves, etc. with other contractors.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Protect piping and fittings from soil and debris with temporary end caps and closures. Maintain in place until installation. Furnish temporary protective coating on cast iron and steel valves.

1.10 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.11 WARRANTY

A. Furnish one year manufacturer's warranty on fuel system components unless specified otherwise.

1.12 EXTRA MATERIALS

- A. Furnish two packing kits for each size plug valve.
- B. Provide a minimum of one plug valve wrench for every 8 plug valves sized 2 inches and smaller.
- C. Provide each plug valve, sized 2-1/2 inches and larger, with a wrench and set screw.

PART 2 PRODUCTS

2.1 NATURAL GAS PIPING, ABOVE GRADE

- A. Pipe sizes 2 inches and under (exposed or accessible locations):
 - 1. Steel Pipe: ASTM A53, ASME B36.10, Schedule 40 black.
 - a. Fittings: ASME B16.3, malleable iron.
 - b. Joints: Taper threads complying with ASME B1.20.1
 - CSST Pipe: ANSI LC1 / CSA 6.26, 300 Series Corrugated Stainless steel pipe with UV resistant polyethylene jacket meeting the requirements of ASTM E84 for flame spread and smoke density.
 - a. Fitting: Brass
 - b. Joints: Flare
 - 3. Gas piping run at elevated pressure (higher than 14" w.c.) shall be welded.
- B. Pipe sizes 2 inches and under (concealed, non-accessible or exterior locations):
 1. Steel Pipe: ASTM A53, Schedule 40 black.
 - a. Fittings: ASTM A105, ASME B16.11, 3000# socket weld fittings.

- b. Joints: NFPA 54, welded to ASME 31.2.
- 2. Note: Piping installed in concealed locations is subject to approval by the authority having jurisdiction. Contractor shall verify installation and material is permitted before performing any work.
- C. Pipe sizes 2-1/2 inches and over:
 - 1. Steel Pipe: ASTM A53, Schedule 40 black.
 - a. Fittings: ASTM A234, forged steel welding type.
 - b. Joints: NFPA 54, welded to ASME B31.2.

2.2 FLANGES, UNIONS, AND COUPLINGS

- A. Pipe size 2 inches and under: Ferrous Pipe: 150 psi malleable iron threaded unions.
- B. Pipe size over 2 inches: Ferrous Pipe: 150 psi forged steel slip-on flanges; 1/16 inch thick preformed neoprene gaskets.

2.3 PLUG VALVES, EXTERIOR, ABOVE GRADE

- A. Manufacturers:
 - 1. Homestead Series 600.
 - 2. Rockwell, Model 1925.
 - 3. Nordstrom.
 - 4. DeZurik.
 - 5. Substitutions: Section 016000 Product Requirements.
- B. Furnish materials in accordance with supplying gas company's requirements.
- C. 1 inch to 6 inches: ASME B16.33; Cast iron or carbon steel body, cast iron or carbon steel lubricated plug, carbon steel and stainless steel internal parts, flanged or welded end connections, wrench operated, and UL listed.

PART 3 EXECUTION

3.1 **PREPARATION**

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION

- A. Install piping in accordance with ASME B31.2.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals. Install in accordance with NACE RP-01-69.
- C. Route piping in orderly manner and maintain gradient.
- D. Install piping to conserve building space and not interfere with use of space.

- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide clearance for access to valves and fittings.
- H. Provide a dirt leg at the bottom of all gas drops and connections to equipment. Dirt leg length shall be three times the pipe diameter, minimum three inches. A shutoff valve shall be installed before the dirt leg to allow the dirt leg to be cleaned.
- I. A shutoff valve shall be provided within 6 feet of each piece of equipment as required by code.
- J. A union shall be provided at the gas connection to each piece of equipment to allow piping to be easily disconnected.
- K. Where pipe support members are welded to structural building framing, scrape, brush clean, weld, and apply one coat of zinc rich primer.
- L. Prepare pipe, fittings, supports, and accessories not pre-finished, ready for finish painting.
- M. Install valves with stems upright or horizontal, not inverted.
- N. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- O. All welding shall be done by a contractor certified by an independent testing laboratory in the welding procedure being performed. Certification is subject to approval.
- P. All materials and workmanship, both interior and exterior, shall meet the requirements of the supplying gas company, the IFGC and NFPA.
- Q. Piping other than dry gas shall be sloped not less than ¼ inch per 15 feet to prevent traps. Install drip legs at locations required by code to collect condensate.

3.3 SERVICE CONNECTIONS

- A. The Contractor shall obtain all approved certificates, pay all fees and other charges required by the local authorities and the local gas company before the start of any work.
- B. Contractor shall coordinate all changes in connected gas load with the local gas company.

3.4 TESTING

- A. Gas lines shall be pressure tested in accordance with recommendations of the Utility Company serving the building, the International Fuel Gas Code, and NFPA 54.
- B. Gas lines shall be leak tested at connection to each piece of equipment prior to initial operation. Test with combustible gas detector.

END OF SECTION

SECTION 22 33 00

ELECTRIC DOMESTIC WATER HEATERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes domestic water heaters and automatic shutoff valve.
- B. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this Section.
- C. Related Sections:
 - 1. Section 221116 Domestic Water Piping.
 - 2. Division 26: Execution requirements for electric connections specified by this Section.

1.2 REFERENCES

- A. ANSI (American National Standards Institute).
 - 1. ANSI Z21.22 Relief Valves for Hot Water Supply Systems
- B. ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers)
 1. ASHRAE 90.1 Thermal efficiency.
- C. American Society of Mechanical Engineers.
 - 1. ASME Boiler and Pressure Vessel Code: Section VIII Pressure Vessels.
- D. International Code Council
 - 1. International Plumbing Code.
 - 2. International Mechanical Code.
- E. Underwriters Laboratories, Inc.

1.3 SUBMITTALS

- A. Section 016000 Product Requirements: Submittal procedures.
- B. Product Data: Submit dimensioned drawings of water heaters indicating components and connections to other equipment and piping. Submit electrical characteristics and connection locations.

1.4 CLOSEOUT SUBMITTALS

- A. Division 1 Closeout Procedures: Project closeout procedures.
- B. Operation and Maintenance Data: Submit operation, maintenance and inspection data, replacement part numbers and availability, and service facility location and telephone number.
- C. Submit copies of the start-up report.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with the authority having jurisdiction.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience, and with service facilities within 150 miles of Project.
- B. Installer: Company specializing in performing Work of this Section with minimum three years documented experience approved by manufacturer.

1.7 PRE-INSTALLATION MEETING

- A. Division 1 Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing Work of this Section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 Product Requirements: Products storage and handling requirements.
- B. Do not deliver equipment on site until such time as it is to be installed.
- C. Accept equipment on site in original labeled cartons. Inspect for damage.
- D. Store equipment on raised platforms and protect with coverings.
- E. Protect water heaters with temporary inlet and outlet caps. Maintain caps in place until installation.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to purchasing.

1.10 WARRANTY

- A. Division 1 Closeout Procedures: Product warranties and product bonds.
- B. Furnish three year manufacturer's warranty for the domestic water heaters.

1.11 EXTRA MATERIALS

A. Section 016000 - Product Requirements: Spare parts and maintenance products.

PART 2 PRODUCTS

2.1 COMMERCIAL ELECTRIC WATER HEATERS

- A. Manufacturers:
 - 1. Rheem Model EGSP20.
 - 2. Substitutions: Section 016000 Product Requirements.

- B. Furnish materials that are UL listed.
- C. Type: Automatic, electric, vertical storage.
- D. Performance:
 - 1. Storage Capacity: 20 gallons.
 - 2. Heating Element Size: 3.0 kW.
 - 3. Minimum Recovery Rate: 15 gph with 80 degrees F temperature rise.
 - 4. Maximum Working Pressure: 150 psig.
- E. Electrical Characteristics:
 - 1. 208 volts, 1 phase.
- F. Tank: Glass lined welded steel, thermally insulated and complying with ASHRAE 90.1; encased in corrosion-resistant steel jacket with baked-on enamel finish.
- G. Controls: Automatic water thermostat with externally adjustable temperature range, high temperature cutoff switch; flanged or screw-in zinc plated copper sheathed elements, enclosed controls and electrical junction box.
- H. Accessories: Brass water connections and dip tube drain valve, magnesium anode, and ANSI Z21.22 temperature and pressure relief valve; heat traps on hot and cold connections to heater.
- I. Warranty: 3 year limited warranty.

2.2 AUTOMATIC WATER HEATER SHUTOFF VALVE

- A. Manufacturers:
 - 1. Taco Leak Breaker with eLink
 - 2. Substitutions: Section 016000 Product Requirements.
- B. System shall include a shutoff valve with actuator, water sensor, control module with Wi-Fi alert capability, power cord and plug.
- C. Control module shall use Wi-Fi to send alerts via email or text. Notifications will be sent when the device detects status changes for the following: alarm activation, AC or battery power, sensor and valve connection, and module connectivity.
- D. System shall include all required wiring and mounting hardware.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install Work in accordance with the authority having jurisdiction.
- B. Install equipment in accordance with manufacturer's instructions and to the International Plumbing and Mechanical Codes, ANSI, ASME, and UL requirements, as well as Local, State and Federal codes.
- C. Coordinate installation with all piping and electrical work to achieve operating system. Coordinate water heater location with other equipment being installed in the same room.

- D. Outlets from relief valves and drain valves shall be piped full size to the nearest floor drain. Install piping as not to cause a tripping hazard. Piping shall not terminate more than 6" above the floor or waste receptor.
- E. Provide a vacuum relief valve in the cold water supply line above the top of the water heater to prevent siphoning of the water heater.
- F. Water heaters, storage tanks, and expansion tanks shall be clearly marked in a visible location with the following information as applicable:
 - 1. Pennsylvania Standard or National Board number.
 - a. Name of manufacturer, model number, and serial number.
 - b. Year built.
 - c. Maximum allowable working pressure.
 - d. Minimum safety or relief valve capacity.
 - e. Maximum design pressure, _____ psi at _____ degrees F.
 - f. Maximum design temperature, _____ degrees F at _____ psi.
 - g. Capacity: _____ gallons.
 - h. Recovery: _____ gph at _____ degree rise.
 - i. Wattage.
- G. Water heaters not supplied with integral heat traps and serving non-circulated systems shall be provided with heat traps on the supply and discharge piping associated with the water heater as required by the International Energy Conservation Code.
- H. All piping shall be arranged to allow easy access to all controls, man-ways and inspection ports. Location of heater and piping shall allow easy removal of heating elements.
- I. Clean and flush after installation. Seal until pipe connections are made.
- J. Set outlet temperature to 110 degrees F.
- K. The complete installation of the water heater and associated accessories shall be made under the supervision of an authorized representative of the water heater manufacturer. Any special tools needed for proper maintenance shall be furnished and delivered to the Owner.
- L. The Electrical Contractor shall provide a wall mounted manual fused disconnect switch. The switch shall be located in visual sight of the water heater and marked appropriately.

END OF SECTION

PLUMBING FIXTURES SECTION 22 4000

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Lavatories
- B. Kitchen Sinks
- D. Showerheads

1.02 RELATED REQUIREMENTS

- A. Section 07 9005 Joint Sealers: Seal fixtures to walls and floors.
- B. Section 22 1005 Plumbing Piping.

1.03 REFERENCE STANDARDS

- A. ASME A112.18.1 Plumbing Supply Fittings; The American Society of Mechanical Engineers; 2012.
- B. ASME A112.19.2 Ceramic Plumbing Fixtures; The American Society of Mechanical Engineers; 2013.
- C. ASME A112.19.3 Stainless Steel Plumbing Fixtures (Designed for Residential Use); The American Society of Mechanical Engineers; 2008 (R2013).
- D. NSF 61 Drinking Water System Components Health Effects; 2012.
- E. NSF 372 Drinking Water System Components Lead Content; 2011.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

- 2.01 GENERAL
 - A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.03 LAVATORIES

- A. Lavatory Manufacturers:
 - 1. Kohler Company; <u>www.kohler.com</u>.
 - 2. American Standard, Inc;.
 - 3. Approved equal
- B. Lavatory: Kohler Company; Model Pennington, K-2196-4. Installed into countertop. Countertop by GC. Plumbing Contractor to coordinate with the General Contractor.
 - Fitted with: MOEN Commercial two handle lavatory faucet Model: 8216. Include 131 553 pop up assembly drain McGuire #8902 Cast Brass, adjustable "P" trap, 1 ¼" x 1 ½" W cleanout plug, tubing drain to wall, and wall flange, or p-trap to floor (field verify) McGuire #M2165 Lavatory Supply assembly (2) with ½" x 3/8" angle valves, flexible risers, and wall flanges.

- C. Lavatory in UFAS Acessible apartments: Kohler Company; Model Bryant, K-2699-4. Installed into countertop. Countertop by GC. Plumbing Contractor to coordinate with the General Contractor.
 - 1. Three faucet holes, 4" centers
 - Fitted with: MOEN Commercial two handle lavatory faucet Model:
 8216. Include 131 553 pop up assembly drain
 McGuire #8902 Cast Brass, adjustable "P" trap, 1 ¼" x 1 ½" W
 cleanout plug, tubing drain to wall, and wall flange,
 McGuire #M2165 Lavatory Supply assembly (2) with ½" x 3/8" angle
 valves, flexible risers, and wall flanges. All piping under countertop in
 ADA bathroom to have protective cover.

2.04 SINKS

- A. Sink Manufacturers:
 - 1. Moen; http://www.moen.com
 - 2. American Standard, Inc; www.americanstandard-us.com.
 - 3. Kohler Company; <u>www.kohler.com</u>.
- B. 33" ADA Kitchen Sink double bowl Moen Model G202174BQ W/ rear drains both bowls, 5 ½" depth. This sink is to be installed in the ADA/UFAS Accessible apartments only.
 - 1. Drain: 1-1/2 inch (38 mm) chromed brass drain.
 - (1) Fitted with: MOEN Faucet Model: 8707 Single Handle Faucet w/Hose spray McGuire#151A Basket strainer with 1-1/2" tailpiece; 2 required. McGuire #H2165 Supply stop assemblies with ½" x 3/8" angle valve, flexible risers, and flanges. McGuire #8912 Cast brass, adjustable "P" trap with cleanout, tubing drain to wall, and wall flanges. All piping under countertop in ADA bathroom to have protective cover.
- C. 33" Kitchen Sink double bowl Moen Model G202133Q with center drains both bowls.
 - 1. Drain: 1-1/2 inch (38 mm) chromed brass drain.
 - (1) Fitted with: MOEN Faucet Model: 8707 Single Handle Faucet w/Hose spray McGuire#151A Basket strainer with 1-1/2" tailpiece; 2 required. McGuire #H2165 Supply stop assemblies with ½" x 3/8" angle valve, flexible risers, and flanges. McGuire #8912 Cast brass, adjustable "P" trap with cleanout, tubing drain to wall, and wall flanges. All piping under countertop in ADA bathroom to have protective cover.

2.04 SHOWERHEADS

- A. Single Spray Showerhead
 - 1. Manufacturers:
 - a. Moen
 - b. Approved equal

2. MOEN 6300 series Easy Clean XL

PART 3 EXECUTION

- 3.01 EXAMINATION
 - A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
 - B. Verify that electric power is available and of the correct characteristics.
- 3.02 PREPARATION
 - A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for specific fixtures.

3.03 INSTALLATION

- A. Install components level and plumb.
- B. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07905, color to match fixture.

3.04 SCHEDULES

- P1: Not Used
- P2: Double Bowl Kitchen Sink
- P3: UFAS ADA Drop-in Lavatory
- P4: Drop-in Lavatory and Base cabinet
- P5: Shower Head
- P6: Double Bowl UFAS/ADA Kitchen Sink

END OF SECTION 22 4000

SECTION 23 0000 HVAC SPECIFICATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Basic Requirements specifically applicable to all work required to complete the installation. This shall include all electrical, mechanical, controls associated with the scope of work as outlined herein these specifications and equipment manufacturer's specifications.

1.2 GENERAL REQUIREMENTS

- A. Nothing contained in these specifications shall be so construed as to conflict with any local, municipal or state laws, regulations, codes or ordinances governing the installation of HVAC or any other work specified and all such regulations, codes or ordinances are hereby incorporated and made part of these specifications. All such requirements shall be satisfied by the contractor at no additional cost to the Owner.
- B. The mechanical contactor shall provide sheetmetal ductwork to connect the new makeup air unit. The ductwork shall be insulated with a weather proof exterior grade rigid board duct insulation (R-168 min). The proposed ductwork fabrication drawings shall be submitted to the engineer for authorization and approval before the work commences. These drawings shall show all fittings, rises, drops, offsets, etc., as required. The Contractor shall verify the actual dimensions of the proposed equipment to insure that equipment will fit into the available space.
- C. Installation shall be within the limitations imposed by the structural, heating, ventilating and air conditioning, plumbing, electrical requirements, and existing conditions with adequate space for maintenance.
- D. All equipment shall be installed in such a way that all components requiring access (drain pans, drains, smoke dampers, control dampers, control operators, motors, drives, isolation/balancing valves, filters, etc.) are so located and installed that they may be serviced, reset, replaced or recalibrated, etc., by service people with normal service tools and equipment. If any equipment or components are shown in such a position that this Contractor cannot comply with the above, the Contractor shall notify the owner and attempt to resolve the problem of access. If this consultation is not successful, the Engineer shall be notified in writing and a decision requested.
- E. Equipment, devices and materials of similar types, function or one system shall be of the same manufacturer.
- F. Any roofing work required by the contractor shall be coordinated through the owner so as not to void the roofing warranty. The contractor shall be responsible to protect the existing roof from any damage as a result of the work being completed by this contract. If any roofing work is to be completed by this contractor, the contractor shall hire an approved roofing subcontractor to perform any roofing work. The subcontractor must be an approved installing roofing contractor per the roofing manufacturer's recommendations. The contractor shall coordinate all roofing work with the roofing manufacturer. Any roofing work shall be done according to the roofing manufacturer's recommendations.

- G. Any damage to the existing roofing, ceilings, walls, exterior sidewalks, ground shall be repaired to match the existing conditions by the contractor. The contractor shall incur all costs associated with the repairs, finishes, etc.. The work shall be done according to the owners approval.
- H. Contractor shall include MAU manufacturer's startup and check out services. Contractor shall include startup and check out services as part of their bid..

1.3 SUBMITTALS

- A. Provide manufacturer's shop drawing for all equipment being installed as part of this contract. Provide three hard copies or email pdf file.
- B. No HVAC or associated equipment shall be installed prior to acceptance of such equipment by Engineer.

1.4 **REGULATORY REQUIREMENTS**

- A. All HVAC and related work, equipment and materials furnished or installed under this contract shall conform to the requirements of the following:
 - 1. American Gas Association.
 - 2. American National Standards Institute.
 - 3. American Society for Testing Materials.
 - 4. Applicable municipal, county, and state mechanical, electrical, gas, plumbing, health, and sanitary codes, laws, and ordinances.
 - 5. International Building Code (IBC) 2009
 - 6. National Electrical Code.
 - 7. National Electrical Manufacturer's Association.
 - 8. National Fire Protection Association (NFPA).
 - 9. National Standard Plumbing Code.
 - 10. Occupational Safety and Health Administration (OSHA).
- B. Where any of the above are at variance with the drawings and specification, the code requirements shall take precedence and any costs necessary to comply to these shall be included in the contract.
- C. The Contractor shall secure and deliver to the Engineer/Architect all permits, certificates and legal evidence of compliance with the above mentioned laws, codes, ordinances and regulations.
- D. Obtain permit, and request inspections from authority having jurisdiction.

1.5 SPECIFICATIONS

A. Should any incidental work or materials be required but not set forth in the specifications, either directly or indirectly, but which is, nevertheless, necessary for the proper carrying out or completeness of the intent thereof, the Contractor is to understand same to be implied and required and he shall perform all such work and furnish all such materials as fully as if they were particularly described.

1.6 WARRANTY

A. Provide Owner with manufacturer's warranty for each system including all hardware, components, parts and labor for a period of one year from date of Substantial Completion and Acceptance by owner.

B. Any manufacturer defects or damage arising during the warranty period shall be prepaid or corrected to the satisfaction of the Owner at no additional cost.

1.7 DEFINITIONS

- A. Furnish: Supply and deliver to the project site ready for installation.
- B. Install: All operations of the project site including: unloading, unpacking, assembly, erection, placing, anchoring, connecting, finishing, protecting, cleaning, testing and startup as required.
- C. Provide: Includes both furnish and install, complete and ready for the intended use.
- D. Capable: Provide equipment/materials that are able to perform the function(s) described.

PART 2 MATERIALS

2.1 DUCTWORK MATERIALS

- A. General: Noncombustible or conforming to requirements for Class 1 air duct materials or UL 181.
- B. Ducts: Galvanized steel lock forming quality per SMACNA requirements.
- C. Fasteners: Use rivets and bolts throughout; sheet metal screws accepted on low pressure ducts.
- D. Sealant: Water resistant, fire resistive, chemically compatible with sealant and mating materials. Do not use oil base caulking, mastics or glazing compounds.

2.2 FABRICATION

- A. Complete metal ducts within themselves with no single partition between ducts. Where width of duct exceeds 18", cross break for rigidity. Open corners are not acceptable.
- B. Lap metal ducts in direction of air flow. Hammer down edges and slips to leave smooth duct interior.
- C. Construct tees, bends and elbows with radius bends of not less than 1 ½ times the width of duct on center line. Where not possible and where rectangular elbows are used, provide air foil type turning vanes. Where acoustical lining is required, provide turning vanes of perforated metal type with fiberglass inside.
- D. Increase duct sizes gradually, not exceeding 15° divergence wherever possible. Maximum divergence upstream of equipment to be 30° and 45° convergence downstream.
- E. Rigidly construct metal ducts with joints mechanically tight, airtight, braced and stiffened so as not to bulge, rattle, vibrate, or sag. Caulk duct joints and connections with sealant as ducts are being assembled.
- F. Construct plenums of galvanized panels joined by standing seams on outside of casing riveted or bolted on approximately 12" centers. Reinforce with steel angles and provide diagonal bracing. Tightly fit at apparatus and seal with sealant. Line plenums with 1" minimum acoustic material treated to eliminate surface erosion.

2.3 DUCT GAUGES AND REINFORCEMENT

A. Refer to applicable SMACNA Tables.

2.4 JOINTS, CONNECTIONS AND BRACING

A. Refer to SMACNA Duct Construction Standards.

2.5 DUCTWORK INSULATION

- A. Exhaust ductwork and return ductwork shall be insulated within 5 feet of exterior wall/roof penetrations with 1 ¹/₂" foil faced fiberglass ductwrap.
- B. Return and exhaust ductwork located inside the building does not require insulation.
- C. Supply ductwork that is located on the exterior of building does not get internally lined. Supply and Return Ductwork on the exterior of the building is to be insulated as specified in item F.
- D. All supply ductwork located inside the building shall be wrapped with:
- E. Flexible type" glass fiber blanket having a thermal conductivity (k) of 0.26 btu/hr./sq. ft./degree F/hr. maximum at a mean temperature of 75° F. and a density of 1 pound per cubic foot, "All-Service Duct Wrap FRK 100", or approved equal. Insulation facing shall consist of aluminum foil, reinforced with fiber glass yarn mesh and laminated to 40 pound chemically treated fire resistant kraft paper FSK. 25% maximum allowable compression.
- F. Insulation shall be cut slightly longer than circumference of duct to insure full thickness at corners. All insulation shall be applied with edges tightly butted. Insulation shall be adhered to duct with fire resistant adhesive. Adhesive shall be applied, so that insulation conforms to duct surfaces uniformly and firmly.
- G. In addition to the adhesive, insulation shall be additionally secured to the bottom of all ducts 18" or wider by means of welded pins and speed clips or cup-head pins on 12" centers. The protruding ends of the pins shall be cut off flush after the speed clips have been applied. The vapor-barrier facing shall be thoroughly sealed with a vapor barrier mastic or tape where the pins have pierced through.
- H. All joints of shall be sealed with 2" wide vapor barrier tabs or strips using a fire resistive adhesive. All cuts or tears shall be sealed with strips of the vapor barrier jacket applied with vapor barrier adhesive or pressure sensitive tape.
- I. Density: 1.0 PCF (pounds per cubic foot)
- J. Thickness: 2.2"

2.6 EXTERIOR DUCTWORK

- A. Insulate all external ductwork (ductwork outside the building- Supply and Return) with external rigid insulation:
 - Rigid fiberglass insulation, thermal conductivity, "K" value at 75 F maximum 0.23 btu/hr./sq. ft./degree F/hr, plain. Facing shall consist of Foil Scrim Kraft FSK; having a maximum vapor transmission rating of 0.02 perms. Secured in place using adhesive and mechanical fasteners spaced a minimum of 12" on center with a minimum of 2 rows per side of duct. Insulation shall be secured with speed washers and all joints, breaks,

punctures or protuberances sealed with appropriate pressure sensitive tape or glass fabric and vapor barrier mastic.

- 2. Density: 3.0 PCF (pounds per cubic foot)
- 3. Thickness: 2" min of R11 insulating value
- B. Wrap entire duct, insulation and weatherproof coating in EPDM roofing. Utilize EPDM roofing manufacturers recommended sealant. Install per EPDM roofing manufacturers recommendations.

2.7 MAKE-UP AIR UNIT (MUA)

- A. The contractor shall furnish and install package rooftop unit(s) as shown and scheduled on the contract documents. The unit(s) shall be installed in accordance with this specification and perform at the specified conditions as scheduled.
- B. Approved Manufacturers
 - 1. AAON—Dan Gardner, Tobey-Karg Sales Agency
 - a. 4640 Campbells Run Road
 - b. Pittsburgh, PA 15205
 - c. 412-787-3899 Phone
 - d. 412-787-8878 Fax
 - e. 814-341-0081 Cell
 - f. dgardner@tobeykarg.com
 - 2. Addison- Chad Ziemba, Kascar KASCAR HVAC Solutions, Inc.
 - a. Engineered Systems Representatives
 - b. 375 Southpointe Blvd
 - c. Suite 340
 - d. Canonsburg, PA 15317
 - e. T: 724.514.6093
 - f. F: 724.514.7152
 - g. C: 412.736.6361
- C. Schedule of capacities as indicated on drawing.
- D. General Description
 - 1. This section includes the design, controls and installation requirements for packaged rooftop units / outdoor air handling units.
- E. Quality Assurance
 - Packaged air-cooled condenser units shall be certified in accordance with ANSI/AHRI Standard 340/360 performance rating of commercial and industrial unitary airconditioning and heat pump equipment.
 - 2. Unit shall be certified in accordance with UL Standard 1995/CSA C22.2 No. 236, Safety Standard for Heating and Cooling Equipment.
 - 3. Unit and refrigeration system shall comply with ASHRAE 15, Safety Standard for Mechanical Refrigeration.
 - 4. Unit shall be certified in accordance with ANSI Z21.47b/CSA 2.3b and ANSI Z83.8/CSA 2.6, Safety Standard Gas-Fired Furnaces.
 - 5. Unit Energy Efficiency Ratio (EER) shall be equal to or greater that prescribed by ASHRAE 90.1, Energy Efficient Design of New Buildings except Low-Rise Residential Buildings.
 - 6. Unit shall be safety certified by ETL and ETL US listed. Unit nameplate shall include the ETL/ETL Canada label.
- F. Submittals

- 1. Product Data: Literature shall be provided that indicates dimensions, operating and shipping weights, capacities, ratings, fan performance, filter information, factory supplied accessories, electrical characteristics and connection requirements. Installation, Operation, and Maintenance manual with startup requirements shall be provided.
- 2. Shop Drawings: Unit drawings shall be provided that indicates assembly, unit dimensions, construction details, clearances and connection details. Computer generated fan curves for each fan shall be submitted with specific design operation point noted. Wiring diagram shall be provided with details for both power and control systems and differentiate between factory installed and field installed wiring.
- G. Delivery, Storage, and Handling
 - 1. Unit shall be shipped with doors screwed shut and outside air hood closed to prevent damage during transport and thereafter while in storage awaiting installation.
 - 2. Follow Installation, Operation, and Maintenance manual instructions for rigging, moving, and unloading the unit at its final location.
 - 3. Unit shall be stored in a clean, dry place protected from construction traffic in accordance with the Installation, Operation, and Maintenance manual.
- H. Warranty
 - 1. Manufacturer shall provide a limited "parts only" warranty for a period of 12 months from the date of equipment startup or 18 months from the date of original equipment shipment from the factory, whichever is less. Warranty shall cover material and workmanship that prove defective, within the specified warranty period, provided manufacturer's written instructions for Installation, Operation, and maintenance have been followed. Warranty excludes parts associated with routine maintenance, such as belts and filters.
- I. General Description
 - 1. Packaged rooftop unit shall include compressors, evaporator coils, filters, supply fans, dampers, air-cooled condenser coils, condenser fans, reheat coil, gas heaters, and unit controls.
 - 2. Unit shall be factory assembled and tested including leak testing of the DX coils, pressure testing of the refrigeration circuit, and run testing of the completed unit. Run test report shall be supplied with the unit in the service compartment's literature pocket.
 - 3. Unit shall have decals and tags to indicate lifting and rigging, service areas and caution areas for safety and to assist service personnel.
 - 4. Unit components shall be labeled, including refrigeration system components and electrical and controls components.
 - 5. Estimated sound power levels (dB) shall be shown on the unit ratings sheet.
 - 6. Installation, Operation, and Maintenance manual shall be supplied within the unit.
 - 7. Laminated color-coded wiring diagram shall match factory installed wiring and shall be affixed to the interior of the control compartment's hinged access door.
 - 8. Unit nameplate shall be provided in two locations on the unit, affixed to the exterior of the unit and affixed to the interior of the control compartment's hinged access door.
- J. Construction
 - 1. All cabinet walls, access doors, and roof shall be fabricated of 2" double wall, impact resistant, rigid polyurethane foam panels.
 - 2. Unit insulation shall have a minimum thermal resistance R-value of 13. Foam insulation shall have a minimum density of 2 pounds/cubic foot and shall be tested in accordance with ASTM D1929-11 for a minimum flash ignition temperature of 610°F.
 - 3. Unit construction shall be double wall with G90 galvanized steel on both sides and a thermal break. Double wall construction with a thermal break prevents moisture accumulation on the insulation, provides a cleanable interior, prevents heat transfer through the panel, and prevents exterior condensation on the panel.

- 4. Unit shall be designed to reduce air leakage and infiltration through the cabinet. Cabinet leakage shall not exceed 1% of total airflow when tested at 3 times the minimum external static pressure provided in AHRI Standard 340/360. Panel deflection shall not exceed L/240 ratio at 125% of design static pressure, at a maximum 8 inches of positive or negative static pressure, to reduce air leakage. Deflection shall be measured at the midpoint of the panel height and width. Continuous sealing shall be included between panels and between access doors and openings to reduce air leakage. Piping and electrical conduit through cabinet panels shall include sealing to reduce air leakage.
- 5. Roof of the air tunnel shall be sloped to provide complete drainage. Cabinet shall have rain break overhangs above access doors.
- 6. Access to filters, dampers, cooling coils, reheat coil, heaters, compressors, and electrical and controls components shall be through hinged access doors with quarter turn, zinc cast, lockable handles. Full length stainless steel piano hinges shall be included on the doors.
- 7. Exterior paint finish shall be capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with ASTM B 117-95 test procedure.
- 8. Units with cooling coils shall include double sloped 304 stainless steel drain pans.
- 9. Unit shall be provided with horizontal discharge and horizontal return air openings. All openings through the base pan of the unit shall have upturned flanges of at least 1/2 inch in height around the opening.
- 10. Unit shall include lifting lugs on the top of the unit.
- K. Electrical
 - 1. Unit shall be provided with factory installed and factory wired, fused disconnect switch.
 - 2. Unit shall be provided with a factory installed and factory wired 115V, 12 amp GFI outlet disconnect switch in the unit control panel. Powered from unit with the disconnect switch in the off position.
 - 3. Unit shall be provided with phase and brown out protection which shuts down all motors in the unit if the electrical phases are more than 10% out of balance on voltage, the voltage is more than 10% under design voltage or on phase reversal.
- L. Supply Fans
 - 1. Unit shall include direct drive, unhoused, backward curved, plenum supply fans.
 - 2. Blowers and motors shall be dynamically balance and mounted on rubber isolators.
 - 3. Motors shall be premium efficiency ODP with ball bearings rated for 200,000 hours service with external lubrication points.
 - 4. Variable frequency drives shall be factory wired and mounted in the unit. Fan motors shall be premium efficiency.
- M. Evaporator Coils
 - 1. Coils shall be designed for use with R-410A refrigerant and constructed of copper tubes with aluminum fins mechanically bonded to the tubes and galvanized steel end casings. Fin design shall be sine wave rippled.
 - 2. Coils shall have interlaced circuitry and shall be 6 row high capacity.
 - 3. Coils shall be hydrogen or helium leak tested.
 - 4. Coils shall be furnished with factory installed expansion valves.
- N. Gas Heating
 - 1. Stainless steel heat exchanger furnace shall carry a 25 year non-prorated warranty, from the date of original equipment shipment from the factory.
 - 2. Gas furnace shall consist of stainless steel heat exchangers with multiple concavities, an induced draft blower and an electronic pressure switch to lockout the gas valve until the combustion chamber is purged and combustion airflow is established.

- 3. Furnace shall include a gas ignition system consisting of an electronic igniter to a pilot system, which will be continuous when the heater is operating, but will shut off the pilot when heating is not required.
- 4. Unit shall include a single gas connection and have gas supply piping entrances in the unit base for through-the-curb gas piping and in the outside cabinet wall for across the roof gas piping.
- 5. Natural gas furnace shall be equipped with modulating gas valves, adjustable speed combustion blowers, stainless steel tubular heat exchangers, and electronic controller. Combustion blowers and gas valves shall be capable of modulation. Electronic controller includes a factory wired, field installed supply air temperature sensor. Sensor shall be field installed in the supply air ductwork. Supply air temperature set point shall be adjustable on the electronic controller within the controls compartment. 540 MBH gas heating assemblies shall be capable of operating at any firing rate between 100% and 5% of their rated capacity (20:1 turndown).

O. Filters

- 1. Unit shall include 2 inch thick, pleated panel filters with an ASHRAE efficiency of 30% and MERV rating of 8, upstream of the cooling coil.
- 2. Unit shall include 100% motor operated outside air damper assembly constructed of extruded aluminum, hollow core, airfoil blades with rubber edge and end seals. Damper blades shall be gear driven and designed to have no more than 20 cfm of leakage per sq ft. at 4 in. w.g. air pressure differential across the damper. Low leakage dampers shall be Class 2 AMCA certified, in accordance with AMCA Standard 511.Damper assembly shall be controlled by spring return, 2 position actuator. Unit shall include outside air opening bird screen and outside air hood.
- P. Controls
 - 1. Factory Installed and Factory Provided Controller
 - 2. Unit controller shall be capable of controlling all features and options of the unit. Controller shall be factory installed in the unit controls compartment and factory tested. Controller shall be capable of standalone operation with unit configuration, set point adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling available without dependence on a building management system.
 - 3. Controller shall have an onboard clock and calendar functions that allow for occupancy scheduling.
 - 4. Controller shall include non-volatile memory to retain all programmed values without the use of a battery, in the event of a power failure.
 - 5. Makeup Air Controller
 - 6. Unit shall modulate cooling with constant airflow to meet ventilation outside air loads. Cooling capacity shall modulate based on supply air temperature.
 - 7. Supply air temperature shall be reset based on space temperature and space mounted thermostat. Provide new thermostat from unit manufacturer with remote bulb sensor.
 - 8. Unit shall modulate heating with constant airflow to meet ventilation outside air loads.
 - 9. Provide wall mounted space thermostat with remote sensing bulb.
- Q. Accessories
 - 1. Unit shall be provided with a smoke detector sensing the supply air of the unit, wired to shut off the unit's control circuit. The smoke detector shall be compatible with the building fire alarm system. Coordinate with owner and fire alarm system manufacturer prior to ordering the unit. Smoke detector shall be wired into the building fire alarm system.
 - 2. Unit shall be provided with a safety shutdown terminal block for installation of a smoke detector which shuts off the unit's control circuit.
- R. Curbs

- 1. Curbs shall to be fully gasketed between the curb top and unit bottom with the curb providing full perimeter support, cross structure support and air seal for the unit.Curb gasket shall be furnished within the control compartment of the rooftop unit to be mounted on the curb immediately before mounting of the rooftop unit.
- 2. Solid bottom curb shall be factory assembled and fully lined with 1 inch neoprene coated fiberglass insulation and include a wood nailer strip.
- S. Installation, Operation, and Maintenance
 - 1. Installation, Operation, and Maintenance manual shall be supplied with the unit.
 - 2. Installing contractor shall install unit, including field installed components, in accordance with Installation, Operation, and Maintenance manual instructions.
 - 3. Start up and maintenance requirements shall be complied with to ensure safe and correct operation of the unit. Startup shall be completed by the unit manufacturers factory trained service technician. Contractor to provide documentation on name, address, etc. of technician to be used prior to completing unit start up.

PART 3

3.1 AIR BALANCE

- A. Perform testing of central air handling units, balancing of distribution systems and adjustment of terminal devices for heating, ventilation and air conditioning systems of project including:
 - 1. Make up air unit.
 - 2. Air distribution systems.
- B. Measure and record air flows (cfm's) at each supply diffuser/grille and return grilles. Measure the MAU outside air intake air flows.
- C. Provide instruments required for testing, adjusting and balancing operations.
- D. The organization which performs the service shall be a current member in good standing, certified to perform services required for the Project, of either:
 - 1. Associated Air Balance Council (AABC).
 - 2. National Environmental Balancing Bureau (NEBB).
- E. The firm shall show proof of having tested and balanced at least five (5) projects of similar size and scope.
- F. Provide typed written report of measurements and final settings. Provide sample report to engineer for approval prior to starting any balancing.

END OF SECTION

SECTION 26 0001 MINOR ELECTRICAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical demolition.

PART 2 PRODUCTS

- 2.01 MATERIALS AND EQUIPMENT
 - A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
- 3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK
 - A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations. Applicable equipment and materials include, but are not limited to:
 - B. Remove, relocate, and extend existing installations to accommodate new construction.
 - C. Remove abandoned wiring to source of supply.
 - D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
 - E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
 - F. Repair adjacent construction and finishes damaged during demolition and extension work.
 - G. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

END OF SECTION 26 0001

SECTION 26 0519

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Armored cable.
- C. Metal-clad cable.
- D. Wiring connectors.
- E. Electrical tape.
- F. Heat shrink tubing.
- G. Oxide inhibiting compound.
- H. Wire pulling lubricant.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 Firestopping.
- B. Section 26 0501 Minor Electrical Demolition: Disconnection, removal, and/or extension of existing electrical conductors and cables.
- C. Section 26 0526 Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.

1.03 REFERENCE STANDARDS

- A. ASTM B3 Standard Specification for Soft or Annealed Copper Wire; 2013.
- B. ASTM B8 Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011.
- C. ASTM B33 Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010.
- D. ASTM B787/B787M Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2009).
- E. ASTM B800 Standard Specification for 8000 Series Aluminum Alloy Wire for Electrical Purposes -Annealed and Intermediate Tempers; 2005 (Reapproved 2011).
- F. ASTM B801 Standard Specification for Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy Wire for Subsequent Covering of Insulation; 2007 (Reapproved 2012).
- G. ASTM D3005 Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2010.
- H. NECA 1 Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- I. NECA 104 Recommended Practice for Installing Aluminum Building Wire and Cable; National Electrical Contractors Association; 2012 (NECA/AA 104).
- J. NECA 120 Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC); National Electrical Contractors Association; 2006.
- K. NEMA WC 70 Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; National Electrical Manufacturers Association; 2009 (ANSI/NEMA WC 70/ICEA S-95-658).
- L. NETA ATS Acceptance Testing Specifications for Electrical Power Equipment and Systems; International Electrical Testing Association; 2013 (ANSI/NETA ATS).
- M. NFPA 70 National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

- N. UL 4 Armored Cable; Current Edition, Including All Revisions.
- O. UL 44 Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- P. UL 83 Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- Q. UL 486A-486B Wire Connectors; Current Edition, Including All Revisions.
- R. UL 486C Splicing Wire Connectors; Current Edition, Including All Revisions.
- S. UL 486D Sealed Wire Connector Systems; Current Edition, Including All Revisions.
- T. UL 510 Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.
- U. UL 1569 Metal-Clad Cables; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F (-10 degrees C), unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Provide conductors and cables with lead content less than 300 parts per million.

- D. Provide new conductors and cables manufactured not more than one year prior to installation.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- F. Comply with NEMA WC 70.
- G. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- H. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- I. Conductors for Grounding and Bonding: Also comply with Section 26 0526.
- J. Conductor Material:
 - Provide copper conductors except where aluminum conductors are specifically indicated or permitted for substitution. Conductor sizes indicated are based on copper unless specifically indicated as aluminum. Conductors designated with the abbreviation "AL" indicate aluminum.
 a. Where aluminum conductors are substituted for copper, comply with the following:
 - Where aluminum conductors are substituted for copper, comply with the following:
 Size aluminum conductors to provide, when compared to copper sizes indicated,
 - equivalent or greater ampacity and equivalent or less voltage drop.
 - 2) Increase size of raceways, boxes, wiring gutters, enclosures, etc. as required to accommodate aluminum conductors.
 - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B 787M unless otherwise indicated.
 - 3. Tinned Copper Conductors: Comply with ASTM B33.
 - 4. Aluminum Conductors (only where specifically indicated or permitted for substitution): AA-8000 series aluminum alloy conductors recognized by ASTM B800 and compact stranded in accordance with ASTM B801 unless otherwise indicated.
- K. Minimum Conductor Size:
 - 1. Branch Circuits: 12 AWG.
 - a. Exceptions:
 - 1) 20 A, 120 V circuits longer than 75 feet (23 m): 10 AWG, for voltage drop.
 - 2) 20 A, 120 V circuits longer than 150 feet (46 m): 8 AWG, for voltage drop.
 - 3) 20 A, 277 V circuits longer than 150 feet (46 m): 10 AWG, for voltage drop.
 - 2. Control Circuits: 14 AWG.
- L. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- M. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
 - 3. Color Code:
 - a. 240/120 V, 1 Phase, 3 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Neutral/Grounded: White.
 - b. Equipment Ground, All Systems: Green.
 - c. Isolated Ground, All Systems: Green with yellow stripe.
 - d. Travelers for 3-Way and 4-Way Switching: Pink.
 - e. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor Stranding:

- 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.

2.04 ARMORED CABLE

- A. Description: NFPA 70, Type AC cable listed and labeled as complying with UL 4, and listed for use in classified firestop systems to be used.
- B. Conductor Stranding:
 - 1. Size 10 AWG and Smaller: Solid.
 - 2. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation: Type THHN.
- E. Grounding: Combination of interlocking armor and integral bonding wire.
- F. Armor: Steel, interlocked tape.

2.05 METAL-CLAD CABLE

- A. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.
- B. Conductor Stranding:
 - 1. Size 10 AWG and Smaller: Solid.
 - 2. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.
- E. Grounding: Full-size integral equipment grounding conductor.
- F. Armor: Steel, interlocked tape.

2.06 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Wiring Connectors for Splices and Taps:
 - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
 - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
 - 3. Connectors for Aluminum Conductors: Use compression connectors.
- C. Wiring Connectors for Terminations:
 - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
 - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
 - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
 - 4. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
 - 5. Aluminum Conductors: Use compression connectors for all connections.
 - 6. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
 - 7. Conductors for Control Circuits: Use crimped terminals for all connections.

- D. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
- E. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F (105 degrees C) for standard applications and 302 degrees F (150 degrees C) for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
- F. Push-in Wire Connectors: Rated 600 V, 221 degrees F (105 degrees C).
 - 1. Manufacturers:
 - a. Ideal Industries, Inc: www.idealindustries.com.
 - b. NSI Industries LLC: www.nsiindustries.com.
 - c. Wago Corporation: www.wago.us.
- G. Mechanical Connectors: Provide bolted type or set-screw type.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. Ilsco: www.ilsco.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
- H. Compression Connectors: Provide circumferential type or hex type crimp configuration.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. Ilsco: www.ilsco.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
- I. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. Ilsco: www.ilsco.com.
 - c. Thomas & Betts Corporation: www.tnb.com.

2.07 WIRING ACCESSORIES

- A. Electrical Tape:
 - 1. Manufacturers:
 - a. 3M: www.3m.com.
 - b. Plymouth Rubber Europa: www.plymouthrubber.com.
 - Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
 - Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
 - 4. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil (2.3 mm).
- B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
- C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
- D. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.

- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as shown on the drawings.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

- A. Circuiting Requirements:
 - 1. Unless dimensioned, circuit routing indicated is diagrammatic.
 - 2. When circuit destination is indicated and routing is not shown, determine exact routing required.
 - 3. Arrange circuiting to minimize splices.
 - 4. Include circuit lengths required to install connected devices within 10 ft (3.0 m) of location shown.
 - 5. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are shown as separate, combining them together in a single raceway is not permitted.
 - a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
 - b. Increase size of conductors as required to account for ampacity derating.
 - c. Size raceways, boxes, etc. to accommodate conductors.
 - 6. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
- C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.
- D. Install aluminum conductors in accordance with NECA 104.
- E. Install armored cable (Type AC) in accordance with NECA 120.
- F. Install metal-clad cable (Type MC) in accordance with NECA 120.
- G. Installation in Raceway:
 - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 - 2. Pull all conductors and cables together into raceway at same time.
 - 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 - 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- H. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- I. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
 - 1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
- J. Terminate cables using suitable fittings.
 - 1. Armored Cable (Type AC):
 - a. Use listed fittings and anti-short, insulating bushings.
 - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
 - 2. Metal-Clad Cable (Type MC):
 - a. Use listed fittings.
 - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
- K. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.
- L. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet (1.5 m) of slack.
- M. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- N. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- O. Make wiring connections using specified wiring connectors.
 - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 - 3. Do not remove conductor strands to facilitate insertion into connector.
 - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
 - 5. Connections for Aluminum Conductors: Fill connectors with oxide inhibiting compound where not pre-filled by manufacturer.
 - 6. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 - 7. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- P. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
- Q. Insulate ends of spare conductors using vinyl insulating electrical tape.
- R. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.
- S. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- T. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

- A. Perform inspection, testing, and adjusting in accordance with Section 01 4000.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
- D. Correct deficiencies and replace damaged or defective conductors and cables.

SECTION 26 0533 CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical metallic tubing (EMT).
- B. Rigid polyvinyl chloride (PVC) conduit.
- C. Conduit fittings.
- D. Accessories.

1.02 REFERENCE STANDARDS

- A. ANSI C80.3 American National Standard for Electrical Metallic Tubing -- Steel (EMT-S).
- B. NECA 1 Standard for Good Workmanship in Electrical Construction.
- C. NECA 111 Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC).
- D. NEMA FB 1 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.
- E. NEMA TC 2 Electrical Polyvinyl Chloride (PVC) Conduit.
- F. NEMA TC 3 Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
- G. NFPA 70 National Electrical Code.
- H. UL 514B Conduit, Tubing, and Cable Fittings.
- I. UL 651 Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings.
- J. UL 797 Electrical Metallic Tubing-Steel.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
 - 4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
 - 5. Notify Engineer/Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
 - 1. Exterior, Direct-Buried: Use rigid PVC conduit.
- D. Exposed, Exterior: Use galvanized steel rigid metal conduit.

2.02 CONDUIT REQUIREMENTS

- A. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling a mandrel through them.
- B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.
- B. Fittings:
 - 1. Manufacturer: Same as manufacturer of conduit to be connected.
 - 2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.04 ACCESSORIES

- A. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.
- B. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.
- D. Conduit Routing:
 - 1. Unless dimensioned, conduit routing indicated is diagrammatic.
 - 2. When conduit destination is indicated without specific routing, determine exact routing required.
- E. Conduit Support:

- 1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
- 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- F. Connections and Terminations:
 - 1. Use suitable adapters where required to transition from one type of conduit to another.
 - 2. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 - 3. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- G. Penetrations:
 - 1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 - 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 - 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 - 4. Conceal bends for conduit risers emerging above ground.
 - 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 - 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 - 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 - 8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- H. Underground Installation:
 - 1. Provide trenching and backfilling in accordance with Section 31 2316 and Section 31 2323.
 - 2. Minimum Cover, Unless Otherwise Indicated or Required:
 - a. Underground, Exterior: 24 inches.
- I. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
 - 1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 - 2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
 - 3. Where conduits are subject to earth movement by settlement or frost.
- J. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
 - 1. Where conduits pass from outdoors into conditioned interior spaces.
- 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- K. Provide grounding and bonding in accordance with Section 26 0526.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 Quality Requirements, for additional requirements.
- B. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

SECTION 26 2726 WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall switches.
- B. Receptacles.
- C. Wall plates.
- 1.02 RELATED REQUIREMENTS
 - A. Section 26 0537 Boxes.

1.03 REFERENCE STANDARDS

- FS W-C-596 Connector, Electrical, Power, General Specification for; Federal Specification; Revision G, 2001.
- B. FS W-S-896 Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification); Federal Specification; Revision F, 1999.
- C. NECA 1 Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- D. NEMA WD 1 General Color Requirements for Wiring Devices; National Electrical Manufacturers Association; 1999 (R 2010).
- E. NEMA WD 6 Wiring Device -- Dimensional Specifications; National Electrical Manufacturers Association; 2002 (R2008).
- F. NFPA 70 National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 20 General-Use Snap Switches; Current Edition, Including All Revisions.
- H. UL 498 Attachment Plugs and Receptacles; Current Edition, Including All Revisions.
- I. UL 514D Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.
- J. UL 943 Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
 - 3. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
 - 4. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
- C. Operation and Maintenance Data:
 - 1. GFI Receptacles: Include information on status indicators and testing procedures and intervals.
- D. Project Record Documents: Record actual installed locations of wiring devices.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hubbell Incorporated: www.hubbell-wiring.com.
- B. Leviton Manufacturing Company, Inc: www.leviton.com.
- C. Lutron Electronics Company, Inc: www.lutron.com.
- D. Substitutions: See Section 01 6000 Product Requirements.
- E. Source Limitations: Where possible, for each type of wiring device furnish products produced by a single manufacturer and obtained from a single supplier.

2.02 WIRING DEVICE APPLICATIONS

- A. Provide wiring devices suitable for intended use and with ratings adequate for load served.
- B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.
- C. Provide tamper resistant receptacles for all receptacles installed in dwelling units.
- D. Provide GFI protection for all receptacles installed within 6 feet (1.8 m) of sinks.
- E. Provide GFI protection for all receptacles installed in kitchens.
- F. Provide GFI protection for all receptacles serving electric drinking fountains.
- G. Unless noted otherwise, do not use combination switch/receptacle devices.

2.03 WIRING DEVICE FINISHES:

- A. Provide wiring device finishes as described below unless otherwise indicated.
- B. Wiring Devices, Unless Otherwise Indicated: White with white nylon wall plate.

2.04 WALL SWITCHES

- A. Manufacturers:
 - 1. Hubbell Incorporated: www.hubbell-wiring.com.
 - 2. Leviton Manufacturing Company, Inc: www.leviton.com.
 - 3. Substitutions: See Section 01 6000 Product Requirements.
- B. All Wall Switches: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.

2.05 RECEPTACLES

- A. Manufacturers:
 - 1. Hubbell Incorporated: www.hubbell-wiring.com.
 - 2. Leviton Manufacturing Company, Inc: www.leviton.com.
 - 3. Lutron Electronics Company, Inc; Designer Style: www.lutron.com.
 - 4. Substitutions: See Section 01 6000 Product Requirements.
- B. All Receptacles: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596;
 - 1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
 - 2. NEMA configurations specified are according to NEMA WD 6.
- C. GFI Receptacles:

- All GFI Receptacles: Provide with feed-through protection, light to indicate ground fault tripped condition and loss of protection, and list as complying with UL 943, class A.
 a. Provide test and reset buttons of same color as device.
- 2. Standard GFI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.

2.06 WALL PLATES

- A. Manufacturers:
 - 1. Hubbell Incorporated: www.hubbell-wiring.com.
 - 2. Leviton Manufacturing Company, Inc: www.leviton.com.
 - 3. Lutron Electronics Company, Inc: www.lutron.com.
 - 4. Substitutions: See Section 01 6000 Product Requirements.
- B. All Wall Plates: Comply with UL 514D.
 - 1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
 - 2. Size: Standard;
 - 3. Screws: Metal with slotted heads finished to match wall plate finish.
- C. Nylon Wall Plates: Smooth finish, high-impact thermoplastic.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.
- 3.03 INSTALLATION
 - A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
 - B. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of wiring devices provided under this section.
 - C. Install wiring devices in accordance with manufacturer's instructions.
 - D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
 - E. Where required, connect wiring devices using pigtails not less than 6 inches (150 mm) long. Do not connect more than one conductor to wiring device terminals.
 - F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
 - G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
 - H. Provide GFI receptacles with integral GFI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.

- I. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- J. Install wall switches with OFF position down.
- K. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- L. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- M. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

3.04 FIELD QUALITY CONTROL

- A. Perform field inspection, testing, and adjusting in accordance with Section 01 4000.
- B. Inspect each wiring device for damage and defects.
- C. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.
- D. Test each receptacle to verify operation and proper polarity.
- E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- F. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

SECTION 26 2816 ENCLOSED CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Enclosed circuit breakers.

- 1.02 RELATED REQUIREMENTS
 - A. Section 26 0526 Grounding and Bonding for Electrical Systems.
 - B. Section 26 0529 Hangers and Supports for Electrical Systems.

1.03 REFERENCE STANDARDS

- A. NECA 1 Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- B. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum); 2008.
- C. NETA ATS Acceptance Testing Specifications for Electrical Power Equipment and Systems; International Electrical Testing Association; 2013 (ANSI/NETA ATS).
- D. NFPA 70 National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 50 Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- F. UL 50E Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- G. UL 489 Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

PART 2 PRODUCTS

2.01 ENCLOSED CIRCUIT BREAKERS

- A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- D. Short Circuit Current Rating:
 - 1. Provide enclosed circuit breakers with listed short circuit current rating not less than the available fault current at the installed location indicated on the drawings.
 - 2. Listed series ratings are acceptable, except where not permitted by motor contribution according to NFPA 70.
 - 3. Label equipment utilizing series ratings as required by NFPA 70.
- E. Conductor Terminations: Suitable for use with the conductors to be installed.
- F. Provide electronic trip circuit breakers where indicated.
- G. Provide insulated, groundable fully rated solid neutral assembly where a neutral connection is required, with a suitable lug for terminating each neutral conductor.
- H. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.
- I. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:

J. Provide externally operable handle with means for locking in the OFF position.

2.02 MOLDED CASE CIRCUIT BREAKERS

- A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
- B. Interrupting Capacity:
 - 1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - 2. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 - 3. Series Rated Systems: Provide circuit breakers listed in combination with upstream devices to provide interrupting rating not less than the short circuit current rating indicated.
- C. Conductor Terminations:
 - 1. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
- D. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.
- E. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that the ratings of the enclosed circuit breakers are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed circuit breakers.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions.
- B. Install enclosed circuit breakers securely, in a neat and workmanlike manner in accordance with NECA 1.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required supports in accordance with Section 26 0529.
- E. Install enclosed circuit breakers plumb.
- F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed circuit breakers such that the highest position of the operating handle does not exceed 79 inches (2000 mm) above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 26 0526.

3.03 FIELD QUALITY CONTROL

- A. Perform inspection, testing, and adjusting in accordance with Section 01 4000.
- B. Inspect and test in accordance with manufacturer's instructions and NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for circuit breakers used for service entrance and for circuit breakers larger than _____ amperes. Tests listed as optional are not required.
- D. Ground Fault Protection Systems: Test in accordance with manufacturer's instructions as required by NFPA 70.
- E. Correct deficiencies and replace damaged or defective enclosed circuit breakers.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

- A. Clean dirt and debris from circuit breaker enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

SECTION 26 5000 LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. luminaires.
- B. Exit signs.
- C. Lamps.
- D. Smoke and Strobe Alarm

1.02 REFERENCE STANDARDS

- A. IES LM-80 Approved Method: Measuring Lumen Maintenance of LED Light Sources; Illuminating Engineering Society; 2008.
- B. NECA 1 Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- C. NECA/IESNA 500 Standard for Installing Indoor Commercial Lighting Systems; National Electrical Contractors Association; 2006.
- D. NECA/IESNA 502 Standard for Installing Industrial Lighting Systems; National Electrical Contractors Association; 2006.
- E. NFPA 70 National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. NFPA 101 Life Safety Code; National Fire Protection Association; 2012.
- G. UL 1598 Luminaires; Current Edition, Including All Revisions.
- 1.03 ADMINISTRATIVE REQUIREMENTS
 - A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
 - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
 - 3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
 - 4. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.
- 1.04 SUBMITTALS
 - A. See Section 01 3000 Administrative Requirements, for submittal procedures.
 - B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
- 1.05 QUALITY ASSURANCE
 - A. Conform to requirements of NFPA 70.
- 1.06 DELIVERY, STORAGE, AND PROTECTION
 - A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.

- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.
- 1.07 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

- 1.08 WARRANTY
 - A. See Section 01700 Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

- 2.01 MANUFACTURERS LUMINAIRES
 - A. Cooper Lighting, a division of Cooper Industries: www.cooperindustries.com.
 - B. Substitutions: See Section 01300 Product Requirements.

2.02 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.
- B. Substitutions: See Section 01300 Product Requirements, except where individual luminaire types are designated with substitutions not permitted.

2.03 LUMINAIRES

- A. Manufacturers:
 - 1. Cooper Lighting, a division of Cooper Industries: www.cooperindustries.com.
 - 2. Substitutions: See Section 01300 Product Requirements.
- B. Provide products that comply with requirements of NFPA 70.
- C. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- D. Provide products listed, classified, and labeled as suitable for the purpose intended.
- E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

2.04 EXIT SIGNS

- A. All Exit Signs: Internally illuminated with LEDs unless otherwise indicated; complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
 - 1. Number of Faces: Single or double as indicated or as required for the installed location.
 - 2. Directional Arrows: As indicated or as required for the installed location.
- B. Self-Powered Exit Signs:
 - 1. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
 - 2. Battery: Sealed maintenance-free nickel cadmium unless otherwise indicated.
 - 3. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
 - 4. Provide low-voltage disconnect to prevent battery damage from deep discharge.

2.05 LAMPS

- A. Lamps General Requirements:
 - 1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
 - 2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.

- 3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.
- 4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the Architect to be inconsistent in perceived color temperature.

2.04 SMOKE AND STROBE COMBO PHOTOELECTRIC

A. Provide 3 strobe alarms in each ADA/UFAS apartment identified on the drawings. One(1) strobe in each of the following rooms; Bedroom, Living Room; Bathroom. Integrated smoke alarm and strobe light equal to BRK model number 7010BSL.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of luminaires provided under this section.
- B. Install products according to manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship), NECA 500 (commercial lighting), and NECA 502 (industrial lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Install accessories furnished with each luminaire.
- F. Bond products and metal accessories to branch circuit equipment grounding conductor.
- G. Exit Signs:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- H. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. Inspect each product for damage and defects.
- B. Operate each luminaire after installation and connection to verify proper operation.
- C. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.
- D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

B. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

3.06 CLEANING

A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

SECTION 26 5600 EXTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior luminaires.
- B. Luminaire accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 Cast-in-Place Concrete: Materials and installation requirements for concrete bases for poles.
- B. Section 26 2726 Wiring Devices: Receptacles for installation in poles.

1.03 REFERENCE STANDARDS

- A. IES LM-79 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products.
- C. IES LM-80 Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; Illuminating Engineering Society.
- D. NECA 1 Standard for Good Workmanship in Electrical Construction.
- E. NECA/IESNA 501 Standard for Installing Exterior Lighting Systems.
- F. NFPA 70 National Electrical Code.
- G. UL 1598 Luminaires.
- H. UL 8750 Light Emitting Diode (LED) Equipment for Use in Lighting Products.

1.04 SUBMITTALS

- A. Shop Drawings:
 - 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
 - 2. Provide photometric calculations where luminaires are proposed for substitution.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
 - b. Include IES LM-79 test report for proposed substitutions.
 - 2. Provide electronic files of photometric data certified by a National Voluntary Laboratory Accreditation Program (NVLAP) lab or independent testing agency in IESNA LM-63 standard format for proposed substitutions.
 - 3. Poles: Include information on maximum supported effective projected area (EPA) and weight for the design wind speed.
- C. Samples:
 - 1. Provide one sample(s) of each specified luminaire upon request.
- D. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- E. Project Record Documents: Record actual connections and locations of pole foundations, luminaires, and any pull or junction boxes.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.
- C. Receive, handle, and store wood poles in accordance with ANSI O5.1.

1.07 WARRANTY

- A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- B. Provide three year manufacturer warranty for all LED luminaires, including drivers.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.
- B. Substitutions: See Section 01 6000 Product Requirements.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
- I. Exposed Hardware: Stainless steel.

2.04 FLAG POLE LIGHT

- A. E-Conolight, <u>www.e-conolight.com</u>
 - 1. E-FFA07A Series
 - 2. Photocontrol
 - 3. Slipfitter Mounting
 - 4. Color: selected by owner
- B. Approved Equal.

2.03 ACCESSORIES

A. Provide accessories necessary for complete installation and operation of the lighting system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install products in accordance with manufacturer's instructions.
- D. Install luminaires in accordance with NECA/IESNA 501.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. Pole-Mounted Luminaires:
 - 1. Foundation-Mounted Poles:
 - a. Provide cast-in-place concrete foundations for poles as indicated, in accordance with Section 03 3000.
 - 1) Install anchor bolts plumb per template furnished by pole manufacturer.
 - 2) Position conduits to enter pole shaft.
 - b. Install foundations plumb.
 - c. Install poles plumb, using leveling nuts or shims as required to adjust to plumb.
 - d. Tighten anchor bolt nuts to manufacturer's recommended torque.
 - e. Install anchor base covers or anchor bolt covers as indicated.
 - 2. Grounding:
 - a. Bond luminaires, metal accessories, metal poles, and foundation reinforcement to branch circuit equipment grounding conductor.
 - 3. Install separate service conductors from each luminaire down to handhole for connection to branch circuit conductors.
 - 4. Install weather resistant GFI duplex receptacle with weatherproof cover as specified in Section 26 2726 in designated poles.
- G. Install accessories furnished with each luminaire.
- H. Bond products and metal accessories to branch circuit equipment grounding conductor.
- I. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. Inspect each product for damage and defects.
- B. Operate each luminaire after installation and connection to verify proper operation.
- C. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Engineer/Architect.

3.05 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Engineer/Architect. Secure locking fittings in place.

3.06 CLEANING

A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 01 7800 Closeout Submittals, for closeout submittals.
- B. Demonstration: Demonstrate proper operation of luminaires to Engineer/Architect, and correct deficiencies or make adjustments as directed.

3.08 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

SECTION 31 1000 SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Removal of existing debris.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 5000 Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- C. Section 01 5713 Temporary Erosion and Sediment Control.
- D. Section 01 7000 Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- E. Section 02 4100 Demolition: Removal of built elements and utilities.
- F. Section 31 2200 Grading: Topsoil removal.
- G. Section 31 2200 Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- H. Section 31 2323 Fill: Filling holes, pits, and excavations generated as a result of removal operations.
- I. Section 32 9300 Plants: Protection of existing trees, shrubs, and other plants.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MATERIALS

A. Fill Material: As specified in Section 31 2200 - Grading

PART 3 EXECUTION

3.01 SITE CLEARING

- A. Comply with other requirements specified in Section 01 7000.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Determine the location of existing utilities by contacting the local one-call center by calling 811, making direct contact with each utility provider, and the property owner. The contractor is solely responsible to verify the locations of utilities prior to beginning work.
- B. Where new utility lines cross existing utility lines, the contractor must excavate and determine the exact elevation and location of the existing utility line prior to construction. If a discrepancy is found the engineer shall be notified immediately.
- C. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- D. Protect existing utilities to remain from damage.
- E. Do not disrupt public utilities without permit from authority having jurisdiction.
- F. Protect existing structures and other elements that are not to be removed.

3.03 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, and planting beds.
- B. Do not begin clearing until vegetation to be relocated has been removed.
- C. Do not remove or damage vegetation beyond the limits indicated on drawings.
 1. Exception: Specific trees and vegetation indicated on drawings to be removed.
- D. Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
 - 1. At vegetation removal limits.
 - 2. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
- E. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum disturbance of the subsoil.
- F. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
- G. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.
 - 1. Contractor shall restore all disturbed areas immediately upon completion of work in each respective work, storage and/or disturbed area.

3.04 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

SECTION 31 2200 GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal of topsoil.
- B. Rough grading the site for site structures.
- C. Finish grading.

1.02 RELATED REQUIREMENTS

- A. Section 31 1000 Site Clearing.
- B. Section 31 2316 Excavation.
- C. Section 31 2323 Fill: Filling and compaction.
- D. Section 32 9219 Seeding: Finish ground cover.
- E. Section 32 9300 Plants: Topsoil in beds and pits.

1.03 SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.04 QUALITY ASSURANCE

- A. Comply with the Erosion and Sediment Control Plan, Department of Environmental Protection, and local Conservation District requirements.
- B. Construction Layout: The contractor will engage an independent licensed professional engineer or land surveyor experienced in construction layout to establish all grades, elevations, and location of new work in accordance with the construction documents.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: See Section 31 2323.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities.
- E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.
- G. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.
- H. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.
- E. When excavating through roots, perform work by hand and cut roots with sharp axe.
- F. See Section 31 2323 for filling procedures.
- G. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.
- H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- I. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
- B. Stockpile subsoil to be re-used on site; remove remainder from site.
- C. Stockpiles: Use areas designated on site; pile depth not to exceed 15 feet; protect from erosion.

3.05 FINISH GRADING

- A. Before Finish Grading:
 - 1. Verify building and trench backfilling have been inspected.
 - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 3 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.
- E. Place topsoil in areas where seeding and planting are indicated.
- F. Place topsoil where required to level finish grade.
- G. Place topsoil to the following compacted thicknesses:
 - 1. Areas to be Seeded with Grass: 6 inches.
 - 2. Shrub Beds: 18 inches.
 - 3. Flower Beds: 12 inches.
- H. Place topsoil during dry weather.
- I. Remove roots, weeds, rocks, and foreign material while spreading.
- J. Near plants spread topsoil manually to prevent damage.
- K. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- L. Lightly compact placed topsoil.
- M. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

C. Top Surface of Finish Grade in Handicap Accessible Areas and Accessible Paths: accessible slope criteria shall not be exceed, regardless of the allowable tolerance, in accordance with the authority having jurisdiction.

3.07 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 FIELD QUALITY CONTROL

A. See Section 31 2323 for compaction density testing.

3.09 PROTECTION

- A. Protect graded areas from traffic, freezing, rain, snow, and erosion.
- B. Keep free of trash and debris.
- C. Repair and reestablish finished surfaces that become damaged.
- D. Sequence work activities to protect finish graded areas.

3.10 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

SECTION 31 2316 EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for footings, slabs-on-grade, paving, and site structures.
- B. Trenching for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Section 01 5713 Temporary Erosion and Sediment Control: Slope protection and erosion control.
- B. Section 01 7000 Execution and Closeout Requirements: General requirements for dewatering of excavations and water control.
- C. Section 02 4100 Demolition: Shoring and underpinning.
- D. Section 31 2200 Grading: Soil removal from surface of site.
- E. Section 31 2200 Grading: Grading.
- F. Section 31 2323 Fill: Fill materials, filling, and compacting.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

1.04 PRICE AND PAYMENT PROCEDURES

- A. Unclassified Excavation: Excavate to indicated elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, trees, vegetation, and naturally occurring or manmade obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
- B. Unit prices for excavation will not be used for this project.

1.05 QUALITY ASSURANCE

- A. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- B. Pre-Excavation Conference: Conduct conference at the Project Site to comply with requirements of Division 1 Section Project Coordination.
- C. Construction Layout: The contractor will engage an independent licensed professional engineer or land surveyor experienced in construction layout to establish all grades, elevations, and location of new work in accordance with the construction documents.

1.06 PROJECT CONDITIONS

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Explosives/blasting is not permitted for use on this project.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.

- C. Notify utility company prior to removing and relocating utilities.
- D. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Protect plants, lawns, rock outcroppings, and other features to remain.
- F. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Architect.

3.03 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
- C. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- D. Install a dewatering system as necessary to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.
- E. Contractor is responsible to remove and replace work that becomes saturated, soft, washed out, or otherwise damaged with no change in contract amount or contract length.

3.04 EXCAVATING

- A. All excavation work is Unclassified Excavation unless otherwise noted. Excavate to subgrade elevations, lines, and dimensions as required, regardless of the character of surface or subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or Contract time will be authorized.
- B. Underpin adjacent structures that could be damaged by excavating work.
- C. Excavate to accommodate new structures and construction operations.
- D. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- E. Notify Architect when excavation is complete and subgrade is ready for inspection.
- F. If Architect determines that unsatisfactory soil is present, continue excavation and replace with fill as directed. Authorized additional excavation will be paid for according to contract provisions for changes in the work.
- G. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- H. Do not interfere with 45 degree bearing splay of foundations.
- I. Cut utility trenches wide enough to allow inspection of installed utilities.
- J. Hand trim excavations. Remove loose matter.
- K. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.
- L. Provide temporary means and methods, as required, to remove all water from excavations until directed by the Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- M. Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Architect. If the proposed excavation extends more than 1 foot into the excavation, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by the Geotechnical Engineer.
- N. Remove excavated material that is unsuitable for re-use from site.

- O. Stockpile excavated material to be re-used in area designated on site 31 2200.
- P. Remove excess excavated material from site.

3.05 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1-inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Excavation for Underground Tanks, Basins, Mechanical, Plumbing, or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

3.06 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Field verify all elevations; inverts, rims, pipe slope and finish grades to ensure installation is in accordance with the contract documents. Any discrepancies shall be reported to the engineer immediately. Contractor is responsible to remove and reinstall any work not in accordance with the contract documents.
- C. Excavation shall be in accordance with PennDOT Publication 408 (latest edition, as amended) for all storm sewer piping and in accordance with the requirements of the associated utility provider for all other utilities.
- D. Excavate trenches to uniform widths to provide clearance as indicated on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
- E. Trench Bottoms: Excavate trenches to the bottom of proposed pipe bedding to allow for placement of bedding course. Hand excavate for bell of pipe.

3.07 FIELD QUALITY CONTROL

- A. See Section 01 4000 Quality Requirements, for general requirements for field inspection and testing.
- B. Provide for visual inspection and proof rolling of load-bearing excavated surfaces before placement of foundations or pavements, refer to Section 31 2323.

3.08 PROTECTION

- A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

SECTION 31 2323 FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for footings, slabs-on-grade, paving, and site structures.
- B. Backfilling and compacting for utilities outside the building to utility main connections.
- C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

- A. Section 01 5713 Temporary Erosion and Sediment Control: Slope protection and erosion control.
- B. Section 03 3000 Cast-in-Place Concrete.
- C. Section 31 2200 Grading: Removal and handling of soil to be re-used.
- D. Section 31 2200 Grading: Site grading.
- E. Section 31 2316 Excavation: Removal and handling of soil to be re-used.
- F. Section 32 1416 Brick Unit Paving: Leveling bed placement under pavers.
- G. Section 32 1423 Asphalt Unit Paving: Leveling bed placement under pavers.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.
- C. Excavation: Removal of material encountered to elevations lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below and beyond indicated elevations lines, and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 - 3. Footing Excavation: Excavation required for construction of foundation elements.
 - 4. Pit Excavation: Excavation required for below grade structures and utilities.
 - 5. Trench Excavation: Excavation for subsurface utilities.
 - 6. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- D. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical, plumbing, and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- E. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- F. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- G. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.04 REFERENCE STANDARDS

- A. AASHTO T 180 Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop.
- B. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

- C. ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
- D. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)).
- E. ASTM D2167 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
- F. ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- G. ASTM D3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- H. ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- I. ASTM D6938 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- J. ASTM D6938 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.05 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Materials Sources: Submit name of imported materials source.
- C. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.
- D. Compaction Density Test Reports.

1.06 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- B. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Construction Layout: The contractor will engage an independent licensed professional engineer or land surveyor experienced in construction layout to establish all grades, elevations, and location of new work in accordance with the construction documents.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill: Subsoil excavated on-site or imported borrow soil when sufficient satisfactory soil materials are not available from excavations.
 - 1. Graded.
 - 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, ash, cinders, waste, frozen material, vegetation, and debris.
 - 3. Conforming to ASTM D2487 Group Symbol CL, ML, GW, GC, GM, SP, SW, SC, and SM.
 - 4. Placed within two percent of the optimum moisture content.
- B. Structural Fill: Subsoil excavated on-site or imported borrow soil when sufficient satisfactory soil materials are not available from excavations.
 - 1. Select granular material withe well graded particle size distribution.

- 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
- 3. Conforming to ASTM D2487 Group Symbol GW, GP, GM, or GC.
- 4. Plasticity index less than 10, Liquid limit less than 30.
- 5. Less than 15% by by weight rock fragments larger than 3 inch, less than 30% by weight larger than 3/4 inches, and less than 30% smaller than the No. 200 sieve.
- 6. Material must be capable of a minimum bearing capacity of 3000 psf.
- C. Concrete for Fill: Lean concrete.
- D. Granular Fill: Coarse aggregate as shown on drawings, conforming to _____ the Pennsylvania Department of Transportation Publication 408 standard.
- E. Drainage Fill: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- F. Sand: Conforming to _____ the Pennsylvania Department of Transportation Publication 408 standard.
- G. Topsoil: Topsoil excavated on-site.
 - 1. Graded.
 - 2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
 - 3. Acidity range (pH) of 5.5 to 7.5.
 - 4. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.
 - 5. Conforming to ASTM D2487 Group Symbol OH.
 - 6. If excavated on-site topsoil in unsuitable or insufficient, import the necessary topsoil.
- H. Bedding Course:
 - 1. In accordance with PennDOT Publication 408, latest edition, for all drainage piping and structures.
 - 2. In accordance with the utility providers guidelines for all other utility trenches and structures.
- I. Slag materials are not permitted for use on this project.
- J. Impervious Fill: satisfactory soil mixture capable of compacting to a dense state having a maximum permeability of 1x10-6 cm/s.

2.02 ACCESSORIES

- A. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefin or polyesters; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 1; AASHTO M 288.
 - 2. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
 - 3. Permittivity: 0.05 per second, minimum; ASTM D 4491.
 - 4. UV Stability: 70 percent after 500 hours' exposure; ASTM D 4355.
- B. Drainage Geotextile (filter fabric): Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefin or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Apparent Opening Size: No. 70 sieve, maximum; ASTM D 4751.
 - 3. Permittivity: 0.2 per second, minimum; ASTM D 4491.
 - 4. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
- C. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 - 1. Red: Electric.

- 2. Yellow: Gas, oil, steam, and dangerous materials.
- 3. Orange: Telephone and other communications.
- 4. Blue: Water systems.
- 5. Green: Sewer systems.

2.03 SOURCE QUALITY CONTROL

- A. See Section 01 4000 Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. See Section 31 2200 for additional requirements.
- D. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- E. Verify structural ability of unsupported walls to support imposed loads by the fill.
- F. Verify underground tanks are anchored to their own foundations to avoid flotation after backfilling.
- G. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Protect existing structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Section Site Clearing.
- C. Protect and maintain erosion and sedimentation controls during earthwork operations.
- D. Contractor is responsible to engage an independent licensed professional engineer or land surveyor experienced in construction layout to establish all grades, elevations, and location of new work in accordance with the construction documents.
- E. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.
- F. Cut out soft areas of subgrade not capable of compaction in place. Backfill with as directed.
- G. Refer to the drawings for Base Failure Repair areas indicated.
- H. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- I. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
- C. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- D. Install a dewatering system as necessary to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.
E. Contractor is responsible to remove and replace work that becomes saturated, soft, washed out, or otherwise damaged with no change in contract amount or contract length.

3.04 FILLING AND BACFILLING

- A. Place and compact backfill in excavations promptly, but not before completing the following:
- B. Performing ground improvements in the building and pavement areas as shown and described in the contract documents.
- C. Construction below finish grade including, where applicable, sub-drainage, damp-proofing, waterproofing, and perimeter insulation.
- D. Surveying locations of underground utilities for Record Documents.
- E. Testing and inspecting underground utilities.
- F. Removing concrete formwork.
- G. Removing trash and debris.
- H. Removing temporary shoring and bracing, and sheeting.
- I. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- J. Verifying the constructed work complies with the contract documents.
- K. Fill to contours and elevations indicated using unfrozen materials.
- L. Fill up to subgrade elevations unless otherwise indicated.
- M. Employ a placement method that does not disturb or damage other work.
- N. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- O. Maintain optimum moisture content of fill materials to attain required compaction density.
- P. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- Q. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- R. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- S. Correct areas that are over-excavated.
 - 1. Load-bearing foundation surfaces: Fill with concrete.
 - 2. Other areas: Use structural fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- T. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 97 percent of maximum dry density.
 - 2. At buildings: 100 percent of maximum dry density.
 - 3. At other locations: 95 percent of maximum dry density.
- U. Compaction of soil materials shall be performed with a sheepsfoot roller. Aggregate materials shall be compacted with a smoothdrum vibratory roller.
- V. Reshape and re-compact fills subjected to vehicular traffic.

3.05 SUBGRADE

- A. Notify Architect when excavations have reached required subgrade elevation.
- B. If Architect and/or Geotechnical Testing Agency determine that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade below structures, slabs, and pavements with heavy pneumatic tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet, frozen or saturated subgrades.

- 1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
- 2. Proof-roll with heavy earthmoving equipment, such as a tandem-axle dump truck or a smooth drum vibratory roller weighing not less than 20 tons.
- 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.06 GENERAL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact satisfactory soil fill material in layers to required subgrade elevation as follows.
- C. The rock and hard shale materials shall be broken, crushed, or otherwise reduced so that no fill material is greater than 3-inches in diameter in its greatest dimension.
- D. Place soil fill on subgrades free of mud, frost, snow, or ice.
- E. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content as determined by ASTM D1557.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.07 TRENCH BACKFILL

- A. Backfill shall be placed in accordance with PennDOT Publication 408 (latest edition, as mended) for all storm sewer piping and in accordance with the requirements of the associated utility provider for all other utilities.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with concrete; fill with concrete to elevation of bottom of footings. Concrete is specified in Section Cast-in-Place Concrete.
- D. Place and compact initial backfill of satisfactory soil free of particles larger than 1 inch in any dimension, to a minimum height of 12 inches over the utility pipe or conduit, unless otherwise specified.
 - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- E. Backfill voids with satisfactory soil while installing and removing shoring and bracing.
- F. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
- H. Repair all trenches in roadways in accordance with the drawings.

3.08 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials, excavated satisfactory soil materials, and topsoil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Provide erosion control measures as required to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations.

3.09 FILL AT SPECIFIC LOCATIONS

- A. General Fill for use in lawn and landscaping areas.
- B. Structural Fill at to support all foundations, buildign pads, structures, and pavements unless otherwise noted. :
 - 1. Fill up to subgrade elevations.
 - 2. Maximum depth per lift: 6 inches, compacted.
 - 3. Compact to minimum 100 percent of maximum dry density.
- C. Under Interior Slabs-On-Grade
 - 1. Use Drainage Fill and vapor barrier.
 - 2. Depth: Per drawings.
 - 3. Compact to 100 percent of maximum dry density.
- D. At Foundation Walls and Footings:
 - 1. Use Drainage Fill and geotextile fabric.
 - 2. Fill up to subgrade elevation.
 - 3. Compact each lift to 95 percent of maximum dry density.
 - 4. Do not backfill against unsupported foundation walls.
 - 5. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- E. Over Subdrainage Piping at Foundation Perimeter and Under Slabs:
 - 1. Drainage fill and geotextile fabric: Section 33 4100.
 - 2. Cover drainage fill per drawings.
 - 3. Fill up to subgrade elevation.
 - 4. Compact to 97 percent of maximum dry density.
- F. Over Buried Utility Piping, Conduits, and Duct Bank in Trenches:
 - 1. Bedding: Use Fill Type per detail.
 - 2. Cover with Fill Type per detail.
 - 3. Fill up to subgrade elevation.
 - 4. Compact in maximum 6 inch lifts to 97 percent of maximum dry density.
- G. At Lawn Areas:
 - 1. Use general fill.
 - 2. Fill up to subgrade elevations.
 - 3. Compact to 95 percent of maximum dry density.
 - 4. See Section 31 2200 for topsoil placement.
- H. At Planting Areas Other Than Lawns :
 - 1. Use general fill.
 - 2. Fill up to 18 inches below finish grade elevations.
 - 3. Compact to 95 percent of maximum dry density.
 - 4. See Section 31 2200 for topsoil placement.
- I. Under Monolithic Paving and Monolithic Paver Setting Beds:
 - 1. Compact subsoil to 97 percent of its maximum dry density before placing fill.
 - 2. Use general fill.
 - 3. Fill up to subgrade elevation.
 - 4. Compact to 97 percent of maximum dry density.
 - 5. See Section 32 1123 for aggregate base course placed over fill.

3.10 TOLERANCES

A. Refer to Section 31 2200 Grading.

3.11 FIELD QUALITY CONTROL

- A. See Section 01 4000 Quality Requirements, for general requirements for field inspection and testing.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
- D. Allow testing agency to inspect and test subgrades and each fill or backfill layer at the frequency and in locations as outlined in this section or as directed by the engineer or geotechnical testing agency. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- E. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- F. Testing agency will test compaction of soils in place according to ASTM D 698, ASTM 1557, ASTM D 4253, and ASTM D4254, as applicable. Tests will be performed at the following location and frequencies or as determined by the owner's testing agency.
- G. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
- H. Trench Backfill: each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length, but no fewer than two tests.
- I. Fill Areas: At subgrade and every other compacted fill and backfill layer in all fill areas, one test per 2000 sq. ft. of fill area. The test shall be randomly spaced to distribute samples throughout each discrete fill area. The above criteria shall be applied to each fill area separately.
- J. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- K. Proof roll compacted fill at surfaces that will be under slabs-on-grade, pavers, and paving.

3.12 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, rain, snow, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.
- D. It is the contractor's responsibility to protect subgrade, subbases, graded areas, and completed area from weather conditions, construction traffic, and erosion. No change in contract sum will be authorized for areas that become deficient due to inadequate protection or sequencing of work.

3.13 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition.

- B. Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.
- C. Grade stockpile areas to prevent standing surface water.
- D. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

SECTION 32 1216 ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Bituminous concrete paving.

1.02 RELATED REQUIREMENTS

- A. Section 31 2200 Grading: Preparation of site for paving and base.
- B. Section 31 2323 Fill: Compacted subgrade for paving.
- C. Section 32 1313 Concrete Paving
- D. Section 32 1713 Parking Bumpers: Rubber bumpers.
- E. Section 32 1723.13 Painted Pavement Markings: Concrete bumpers.
- F. Section 33 0513 Manholes and Structures: Manholes, including frames; gutter drainage grilles, covers, and frames for placement by this section.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 01 2200 - Unit Prices for requirements applicable to this section.

1.04 REFERENCE STANDARDS

- A. Pennsylvania Department of Transportation (PennDOT)
 - 1. AI MS-19 A Basic Asphalt Emulsion Manual; Fourth Edition.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with PennDOT.
- B. Mixing Plant: Conform to PennDOT.
- C. Obtain materials from same source throughout.

1.06 FIELD CONDITIONS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Subbase: PennDOT 2A Modified Aggregate; Publication 408, Section 350.
- B. Base Course: PennDOT Superpave HMA; PennDOT Publication 408, Section 309.
- C. Wearing Course: PennDOT Superpave HMA, PG 64-22, 0.3 to < 3 Million ESAL's, 9.5 mm Mix, SRL M; Publication 408, Section 409.
- D. Hot Crack Seal: Asphalt Rubber Sealing Compound, perform work and use material in accordance with PennDOT Publication 408, Section 469 and 705.
 - 1. Crafco Asphalt Rubber type 2, Part No. 34232.
 - 2. Material from source listed in PennDOT Bulletin 15.
- E. Primer: In accordance with State of Pennsylvania Highways standards.
- F. Tack Coat: In accordance with State of Pennsylvania Highways standards.
- G. Paving Membrane: Crafco Paveprep TSA or approved equal.
- H. Slag materials are not permitted for use on this project.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.

- B. Confirm subgrade suitability by verifying compaction and proof rolling, refer to Section 31 2323.
- C. Correct deficient subgrade areas.
- D. Verify gradients and elevations of subgrade are correct.
- E. Verify that inlets and structure elevations within the areas to be paved are correct and ready to receive pavement.
- F. In overlay areas, record the locations of prior paving joints. New pavements shall be constructed so that new joints are offset from the previous joints.

3.02 BASE REPAIR

- A. Areas identified on the drawings to receive base repair shall be excavated and proof roll to confirm the subgrade is suitable.
- B. If subgrade is determined to be suitable by the geotechnical engineer, install separation geotextile and aggregate per the details.
- C. If subgrade is not suitable per the inspection by the geotechnical engineer, continue excavation and fill as directed.

3.03 BASE COURSE

- A. Once subgrade is compacted and approved, place and compact base course(s).
- B. Do not place subbase material on soft, muddy, or frozen areas.
- C. Before placing aggregate subbase, construct berms to confine subbase material.
- D. Control the elevation and depth of subbase materials as shown on the drawings.
- E. Place the indicated type of subbase aggregate in compacted lifts, not exceeding 6 inches per lift.

3.04 COMPACTION OF SUBBASE

- A. After each course has been placed as specified, its entire area shall be compacted with equipment specifically manufactured for that purpose. The sole use of hauling and spreading equipment shall not be considered as a substitute for compacting equipment. Compaction shall be continued until the entire course is uniformly compacted to at least 100% of the maximum dry density determined according to PennDOT PTM No. 106, Method B (ASTM D-698). Testing shall be performed on each lift, in each work area, and at least one test for every 2,000 square feet of surface area.
- B. Each layer of subbase shall be compacted at optimum moisture content. No subsequent layer shall be placed until the specified compaction is obtained for the previous layer.
- C. Test for Depth at each density test location and after completing the density test, carefully dig one test hole to the full depth of the completed subbase. If the subbase is deficient by ½ inch or more from the depth indicated, the area shall be scarified, additional subbase material shall be blended into the area, and the area shall be compacted to the required minimum density.
- D. Should the foundation material beneath the subbase become churned up and mixed with subbase material at any time, the Contractor shall, without additional compensation, remove the mixture and replace it with new subbase material to the required thickness shown on the plans or as previously required by the Engineer. Such replaced subbase material shall be compacted to the required minimum density.

3.05 PROOF ROLLING

- A. Once subbase has been constructed to the plan elevations and achieved the compaction requirements, the subbase shall be proof rolled prior to the installation of asphalt pavement.
- B. Proof rolling shall be performed using a minimum 15 ton pneumatic tired roller or other equivalent equipment accepted by the engineer.
- C. The roller shall make a minimum of two offsetting passes to completely cover the entire area.

- D. During proof rolling, the engineer shall determine if any area ruts or deflects more than ½-inch. Areas rutting or deflecting more than ½-inch shall be considered deficient and must be removed and repaired.
- E. Payment for Repairs shall be as follows:
- 1. Deficient areas shall be repaired at the contractor's expense.

3.06 PREPARATION - PRIMER

- A. Apply primer in accordance with manufacturer's instructions.
- B. Apply primer on aggregate base or subbase at uniform rate of 1/3 gal/sq yd.
- C. Apply primer to contact surfaces of curbs, gutters.
- D. Use clean sand to blot excess primer.

3.07 ASPHALT JOINTS AND CRACK SEALING

- A. Construct joints and crack sealing in accordance with the specifications set forth in PENNDOT Publication 408, section 469 as amended.
- B. Heating Procedures: Use a premixed, prepackaged material. Heat the material within the safe heating temperature range and recommended pouring temperatures found on the label on the manufacturer's shipping container. Place the material as close as possible to the manufacturer's recommended pouring temperature. Do not maintain batches of material at the pouring temperature for more than 6 hours. Reheat according to the manufacturer's recommendations.
- C. Surface Preparation: Clean, dry, and remove debris and loose material from cracks, joints, and adjacent pavement surfaces. If required, rout cracks to create a reservoir 1/2 inch deep. Clean the pavement for 4 inches to 6 inches on either side of the joint or crack. Immediately before sealing, use a compressed air stream of at least 100 pounds per square inch measured at the source, or a hot compressed air lance to clean and dry damp cracks in bituminous pavements. If using the hot compressed air lance, do not damage the surrounding pavement area from overheating.
- D. Sealing: Seal joints and cracks from 1/4 inch to 1 inch wide with asphalt sealant and filling joints and cracks over 1 inch wide with Bituminous Wearing Course FJ-1. If using asphalt sealant, fill prepared joints and cracks level with the pavement surface. Wipe the sealant flush with the pavement surface, leaving a thin film of sealant from 1/32 inch to 1/16 inch thick and from 1 inch to 3 inches wide. After wiping the joint or crack, remove and dispose of excess sealant. Do not place sealant when the air temperature is below 50F or above 90F.

3.08 PAVING MEMBRANE

- A. Install a heavy duty pavement repair geo composite membrane as indicated.
- B. The surface shall be prepared and membrane shall be placed immediately below the asphalt wearing course as indicated on the drawings and details.
- C. Installation shall be in accordance with the manufactures instructions and recommendations.

3.09 MILLING

- A. Mill joints at connections to all existing pavements in order to achieve a full depth wearing course.
- B. Provide a milling machine designed and built for milling existing bituminous pavements with an automatic grade and slope control system and be capable of milling concrete patches.
- C. Mill to provide a finished surface that is free from gouges, grooves, and ridges.
- D. Immediately after milling, remove milled material from project site.
- E. Carefully remove the existing bituminous material around utility facilities within work areas. Repair or replace utility facilities that are damaged by the milling operation to the satisfaction of the utility owner.

- F. Control the rate of milling to avoid tearing of the mat, which causes chunky and non-uniformly milled material.
- G. Maintain the milled pavement surface free of all loose materials and dust.
- H. Do not allow traffic to drive on any milled surface for more than 6 Calendar Days. Place first overlaying bituminous course within 7 Calendar Days from start of the milling.

3.10 PREPARATION - TACK COAT

- A. Ensure that surface is free of dirt, debris, and is ready for paving.
- B. Apply tack coat in accordance with manufacturer's instructions.
- C. Apply tack coat to contact surfaces of curbs, gutters and asphalt.
- D. Coat surfaces of manhole frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.11 PLACING ASPHALT PAVEMENT

- A. Place asphalt binder course within 4 hours of applying primer or tack coat.
- B. Place binder and wearing courses to the compacted thickness indicated on the drawings.
- C. If the course is more than 6-inches in compacted depth, construct in two or more layers of equal depth.
- D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- E. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.
- F. Do not place asphalt pavement on subbase or asphalt base courses with dirt, mud, debris, damp, or wet surfaces.
- G. In overlay areas, paving shall be performed so that the new joints are offset from the existing joints.
- H. Asphalt wedge curbs shall be constructed monolithically with the wearing course.

3.12 TOLERANCES

- A. Parking Areas and Roadways
 - 1. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
 - 2. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
 - 3. Variation from True Elevation: Within 1/2 inch, except where handicap accessibility requirements apply, work must comply with all accessibility guidelines.

3.13 FIELD QUALITY CONTROL

- A. Contractor shall engage a qualified testing agency to perform testing and inspection.
- B. Provide field inspection and testing. Take samples and perform tests in accordance with PennDOT.
- C. Replace pavement that does not comply with the specified requirements.

3.14 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for one days or until surface temperature is less than 140 degrees F.

3.15 CLEANING

- A. Remove all trash and surplus material of every character resulting from the work from the site.
- B. Remove completely any bituminous substance or other material spilled on pavement, walks, or structures.
- C. Clean all surfaces of buildings, or other structures, of tar or any material adhering to or discoloring walls, caused by or exposed by paving operations.

SECTION 32 1313 CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete sidewalks, integral curbs, parking areas, and roads.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 Concrete Forming and Accessories.
- B. Section 03 3000 Cast-in-Place Concrete.
- C. Section 31 2200 Grading: Preparation of site for paving and base.
- D. Section 31 2323 Fill: Compacted subbase for paving.
- E. Section 32 1216 Asphalt Paving: Asphalt wearing course.
- F. Section 32 1726 Tactile Warning Surfacing: Plastic tactile and detectable warning tiles for pedestrian walking surfaces.
- G. Section 33 0513 Manholes and Structures: Manholes, including frames; gutter drainage grilles, covers, and frames for placement by this section.

1.03 REFERENCE STANDARDS

- A. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- B. ACI 301 Specifications for Structural Concrete.
- C. ACI 305R Hot Weather Concreting.
- D. ACI 306R Cold Weather Concreting.
- E. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
- F. ASTM A1064/A1064M Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- G. ASTM C39/C39M Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- H. ASTM C94/C94M Standard Specification for Ready-Mixed Concrete.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on joint filler, admixtures, and curing compound.
- C. Design Data: Indicate pavement thickness, designed concrete strength, reinforcement, and typical details.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

A. Comply with applicable requirements of ACI 301.

2.02 FORM MATERIALS

A. Form Materials: As specified in Section 03 1000, conform to ACI 301.

2.03 REINFORCEMENT

- A. Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; unfinished.
- B. Dowels: ASTM A615/A615M, Grade 40 40,000 psi yield strength; deformed billet steel bars; unfinished finish.

2.04 CONCRETE MATERIALS

- A. Concrete Materials: As specified in Section 03 3000.
- B. The owner does not accept Stone & Company Inc. as a supplier for exterior concrete applications.

2.05 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

2.06 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

A. Prepare subbase in accordance with State of Pennsylvania Highways standards.

3.03 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole and catch basin frames with oil to prevent bond with concrete pavement.
- C. Notify Architect minimum 24 hours prior to commencement of concreting operations.

3.04 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

- A. Place reinforcement as indicated.
- B. Place dowels to achieve pavement and curb alignment as detailed.

3.06 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

- A. Place concrete as specified in Section 03 3000.
- B. Concrete may be placed using the slip form techniques, if contractor demonstrates this capability by constructing a mock-up for the owners and engineers approval.
- C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
- E. Place concrete to indicated pattern.
- F. Apply surface retarder to all exposed surfaces in accordance with manufacturer's instructions.

3.08 JOINTS

- A. Align curb, gutter, and sidewalk joints.
- B. Place 3/8 inch wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.
- C. Provide scored joints.
- D. Provide keyed joints as indicated.
- E. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

3.09 FINISHING

- A. Area Paving: Light broom, texture perpendicular to pavement direction.
- B. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.
- C. Curbs and Gutters: Light broom, texture parallel to pavement direction.
- D. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.10 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- B. Maximum Variation From True Position: 1/4 inch.

3.11 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
 - 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 75 cu yd or less of each class of concrete placed.
 - 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
 - 2. Perform one slump test for each set of test cylinders taken.
- C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.12 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

SECTION 32 1713 PARKING BUMPERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Parking Bumpers

1.02 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide unit configuration, dimensions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Parking Bumpers: Rubberform Recycled Products, LLC, www.rubberform.com or approved equal.
 - 1. 100% high quality recycled rubber
 - 2. Conforms to asphalt or concrete surfaces.
 - 3. 4" high, 6" wide, 72" long.
 - 4. 5 mooring holes for lag bolts or rebar

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install units without damage to shape or finish. Replace or repair damaged units.
- B. Install units in alignment with adjacent work.
- C. Fasten units in place with 2 dowels per unit.

SECTION 32 1723.13

PAINTED PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Parking lot markings, including parking bays, crosswalks, arrows, handicapped symbols, and curb markings.
- B. Roadway lane markings and crosswalk markings.

1.02 RELATED REQUIREMENTS

- A. Section 32 1216 Asphalt Paving.
- B. Section 32 1313 Concrete Paving.
- C. Section 32 1726 Tactile Warning Surfacing: Plastic tactile and detectable warning tiles for pedestrian walking surfaces.

1.03 REFERENCE STANDARDS

- A. FS TT-B-1325 Beads (Glass Spheres); Retro-Reflective; Rev. D, 2007.
- B. MPI (APL) Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.
- C. FHWA MUTCD Manual on Uniform Traffic Control Devices for Streets and Highways; U.S. Department of Transportation, Federal Highway Administration; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawing: Provide shop drawing indicating the exact locations, dimensions, and layout of the proposed pavement markings based on the as-built conditions.
 - 1. Do not proceed with installation of pavement markings without an approved shop drawing.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver paint in containers of at least 5 gallons accompanied by batch certificate.
- B. Deliver glass beads in containers suitable for handling and strong enough to prevent loss during shipment accompanied by batch certificate.
- C. Store products in manufacturer's unopened packaging until ready for installation.
- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Permanent Pavement Markings: Ennis Flint, EF Series Low VOC Solvent Based Traffic Paint
- B. Glass Beads per PennDOT Publication 408, Section 962 and Section 1103.
 1. Reflective glass beads, Type A, conforming to AASHTO M 27.
- C. Temporary Marking Tape: Preformed, pressure sensitive adhesive tape in color(s) required; Contractor is responsible for selection of material of sufficient durability as to perform satisfactorily during period for which its use is required.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of marking materials.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Obliteration of existing markings using paint is acceptable in lieu of removal; apply the black paint in as many coats as necessary to completely obliterate the existing markings.
- D. Clean surfaces thoroughly prior to installation.
 - 1. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods.
 - 2. Completely remove rubber deposits, existing paint markings, and other coatings adhering to the pavement, by scraping, wire brushing, sandblasting, mechanical abrasion, or approved chemicals.
 - 3. Sandblasting: Use equipment of size and capacity necessary, providing not less than 150 cfm of air at pressure not less than 90 psi at each nozzle used.
 - 4. Concrete Pavements remove curing compounds and sealers prior to installation of pavement markings.
- E. Where oil or grease are present, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application; after cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through the new paint.
- F. Establish survey control points to determine locations and dimensions of markings; provide templates to control paint application by type and color at necessary intervals.
- G. Temporary Pavement Markings: When required or directed by Architect, apply temporary markings of the color(s), width(s) and length(s) as indicated or directed.
 - 1. After temporary marking has served its purpose, remove temporary marking by carefully controlled sandblasting, approved grinding equipment, or other approved method so that surface to which the marking was applied will not be damaged.
 - 2. At Contractor's option, temporary marking tape may used in lieu of temporary painted marking; remove unsatisfactory tape and replace with painted markings at no additional cost to Owner.

3.03 INSTALLATION

- A. Install in accordance with the manufacturers instructions and recommendations.
- B. Begin pavement marking as soon as practicable after surface has been cleaned and dried.
- C. Do not apply paint if temperature of surface to be painted or the atmosphere is less than 50 degrees F or more than 95 degrees F.
- D. Apply in accordance with manufacturer's instructions using an experienced technician that is thoroughly familiar with equipment, materials, and marking layouts.
- E. Pavement markings and symbols within the road right of way shall comply with the authority having jurisdiction.
- F. Comply with FHWA MUTCD manual (http://mutcd.fhwa.dot.gov) for details not shown.
- G. Apply markings in locations determined by measurement from survey control points; preserve control points until after markings have been accepted.

- H. Parking spaces and transverse markings immediately adjacent to parking spaces shall be painted.
- I. Parking symbols, arrows, stop bars, and crosswalks shall be hot thermoplastic markings meeting the applicable state highway specifications.
- J. Colors outside the road right of way to be selected by the owner.
- K. Apply uniformly painted markings of color(s), lengths, and widths as indicated on the drawings true, sharp edges and ends.
 - 1. Apply paint in one coat only.
 - 2. Wet Film Thickness: 0.015 inch, minimum.
 - 3. Width Tolerance: Plus or minus 1/8 inch.
- L. Roadway Traffic Lanes: Use suitable mobile mechanical equipment that provides constant agitation of paint and travels at controlled speeds.
 - 1. Conduct operations in such a manner that necessary traffic can move without hindrance.
 - 2. Place warning signs at the beginning of the wet line, and at points well in advance of the marking equipment for alerting approaching traffic from both directions. Place small flags or other similarly effective small objects near freshly applied markings at frequent intervals to reduce crossing by traffic.
 - 3. If paint does not dry within expected time, discontinue paint operations until cause of slow drying is determined and corrected.
 - 4. Skip Markings: Synchronize one or more paint "guns" to automatically begin and cut off paint flow; make length of intervals as indicated.
 - 5. Use hand application by pneumatic spray for application of paint in areas where a mobile paint applicator cannot be used.
 - 6. Distribute glass beads uniformly on the paint lines within ten seconds without any waste, applied at rate of 6 pounds per gallon of paint; if the marking equipment does not have a glass bead dispenser, use a separate piece of equipment adjusted and synchronized with the paint applicator; remove and replace markings having faulty distribution of beads.
- M. Parking Lots: Apply parking space lines, entrance and exit arrows, painted curbs, and other markings indicated on drawings.
 - 1. Mark the International Handicapped Symbol at indicated parking spaces.
 - 2. Application shall be by walk behind or ride on equipment specifically designed for the installation of pavement markings. Hand application by pneumatic spray is not acceptable.
 - 3. Distribute glass beads uniformly on the paint lines within ten seconds without any waste, applied at rate of 6 pounds per gallon (720 g per L) of paint; if the marking equipment does not have a glass bead dispenser, use a separate piece of equipment adjusted and synchronized with the paint applicator; remove and replace markings having faulty distribution of beads.
- N. Symbols: Use a suitable template that will provide a pavement marking with true, sharp edges and ends, of the design and size indicated.

3.04 DRYING, PROTECTION, AND REPLACEMENT

- A. Protect newly painted markings so that paint is not picked up by tires, smeared, or tracked.
- B. Provide barricades, warning signs, and flags as necessary to prevent traffic crossing newly painted markings.
- C. Allow paint to dry at least the minimum time specified by the applicable paint standard and not less than that recommended by the manufacturer.
- D. Remove and replace markings that are applied at less than minimum material rates; deviate from true alignment; exceed length and width tolerances; or show light spots, smears, or other deficiencies or irregularities.

- E. Remove markings in manner to avoid damage to the surface to which the marking was applied, using carefully controlled sand blasting, approved grinding equipment, or other approved method.
- F. Replace removed markings at no additional cost to Owner.

SECTION 32 1726 TACTILE WARNING SURFACING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Plastic tactile and detectable warning tiles for pedestrian walking surfaces.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 Cast-in-Place Concrete: Concrete for sidewalks and platforms.
- B. Section 32 1313 Concrete Paving: Concrete sidewalks.
- C. Section 32 1723.13 Painted Pavement Markings: Crosswalk and curb markings.

1.03 REFERENCE STANDARDS

- A. 49 CFR 27, 37, and 38 Transportation for Individuals with Disabilities; Final Rule; Department of Transportation.
- B. AASHTO LRFD Bridge Design Specifications, Customary U.S. Units (6th Edition).
- C. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design.
- D. ASTM A666 Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- E. ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus.
- F. ASTM C501 Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
- G. ASTM C903 Standard Practice for Preparing Refractory Castable Specimens by Cold Gunning.
- H. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
- I. ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
- J. ASTM D543 Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.
- K. ASTM D570 Standard Test Method for Water Absorption of Plastics.
- L. ASTM D638 Standard Test Method for Tensile Properties of Plastics.
- M. ASTM D695 Standard Test Method for Compressive Properties of Rigid Plastics.
- N. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- O. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- P. ASTM G155 Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials.
- Q. ATBCB PROWAG Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's product data, standard details, details specific to this project; written installation and maintenance instructions.
- C. Samples: For each product specified provide two samples, 8 inches square, minimum; show actual product, color, and patterns.
- D. Shop Drawings: Submit plan and detail drawings. Indicate:

- 1. Locations on project site. Demonstrate compliance with referenced accessibility standards.
- 2. Sizes and layout.
- 3. Pattern spacing and orientation.
- 4. Attachment and fastener details, if applicable
- E. Warranty: Submit manufacturer warranty; complete forms in Owner's name and register with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.
- B. Installer Qualifications: Company certified in writing by product manufacturer as having successfully completed work substantially similar to the work of this section.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to project site in manufacturer's protective wrapping and in manufacturer's unopened packaging.
- B. Store covered and elevated above grade and in manufacturer's unopened packaging until ready for installation. Maintain at ambient temperature between 40 and 90 degrees F.

1.07 WARRANTY

- A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- B. Plastic Tiles: Provide manufacturer's standard five year warranty against manufacturing defects, breakage or deformation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Plastic Tactile and Detectable Warning Surface Tiles:
 - 1. Armor-Tile, a brand of Engineered Plastics, Inc: www.armortiletransit.com.
 - 2. Substitutions: See Section 01 6000 Product Requirements.

2.02 TACTILE AND DETECTABLE WARNING DEVICES

- A. Plastic Tactile and Detectable Warning Tiles: ADA Standards compliant, glass fiber and carbon fiber reinforced, exterior grade, matte finish polyester sheet with truncated dome pattern, solid color throughout, internal reinforcing of sheet and of truncated domes, integral radius cut lines on back face of tile; with factory applied removable protective sheeting.
 - 1. Material Properties:
 - a. Water Absorption: 0.20 percent, maximum, when tested in accordance with ASTM D570.
 - b. Slip Resistance: 0.50 minimum dry static coefficient of friction, when tested in accordance with ASTM D2047.
 - c. Compressive Strength: 25,000 pounds per square inch, minimum, when tested in accordance with ASTM D695.
 - d. Tensile Strength: 10,000 pounds per square inch, minimum, when tested in accordance with ASTM D638.
 - e. Flexural Strength: 25,000 pounds per square inch minimum, when tested in accordance with ASTM D790.
 - f. Chemical Stain Resistance: No reaction to 1 percent hydrochloric acid, motor oil, calcium chloride, gum, soap solution, bleach, or antifreeze, when tested in accordance with ASTM D543.
 - g. Abrasion Resistance: 300, minimum, when tested in accordance with ASTM C501.
 - h. Flame Spread Index: 25, maximum, when tested in accordance with ASTM E84.
 - i. Accelerated Weathering: Delta-E of less than 5.0 at 2,000 hours exposure, when tested in accordance with ASTM G155.

- j. Adhesion: No delamination of tile prior to board failure in a temperature range of 20 to 180 degrees F, when tested in accordance with ASTM C903.
- k. Loading: No damage when tested according to AASHTO LRFD test method HS20.
- I. Salt and Spray Performance: No deterioration or other defect after 200 hours of exposure, when tested in accordance with ASTM B117.
- 2. Installation Method: Cast in place.
- 3. Shape: as shown on drawings.
- 4. Pattern: In-line pattern of truncated domes complying with ADA Standards.
- 5. Color: As selected by owner from manufacturer's full range of colors.

2.03 ACCESSORIES

- A. Fasteners: ASTM A666, Type 304 stainless steel
 - 1. Type: Countersunk, color matched composite sleeve anchors
 - 2. Size: 1/4 inch diameter and 1-1/2 inches long.
- B. Adhesive: Type recommended and approved by surfacing tile manufacturer.
- C. Sealant: Elastomeric sealant of color to match adjacent surfaces; approved by surfacing tile manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that work area is ready to receive work:
 - 1. Examine work area with installer present.
 - 2. If existing conditions are not as required to properly complete the work of this section, notify Architect.
 - 3. Do not proceed with installation until deficiencies in existing conditions have been corrected.
- B. Verify that dimensions, tolerances, and attachment methods for work in this section are properly coordinated with other work on site.

3.02 INSTALLATION, GENERAL

- A. Install in accordance with manufacturer's written instructions.
 - 1. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.
 - 2. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.
- B. Field Adjustment:
 - 1. Cut units to size and configuration shown on drawings.
 - 2. Do not cut plastic tiles to less than 9 inches wide in any direction.
 - 3. Orient so dome pattern is aligned with the direction of ramp.
 - 4. Align truncated dome pattern between adjacent units.
- C. Install units fully seated to substrate, square to straight edges and flat to required slope.
- D. Align units so that tops of adjacent units are flush and joints between units are uniform in width.

3.03 INSTALLATION, CAST IN PLACE PLASTIC TILES

- A. Concrete:
 - 1. See Section 03 3000.
 - 2. Slump: 4 to 7 percent.
- B. When installing multiple adjacent units, leave a 3/16 inch gap between units to allow for expansion.
- C. Tamp and vibrate units as recommended by manufacturer.
- D. Place and position weights on units while concrete cures as recommended by manufacturer. Ensure no voids or air pockets exist between top surface of concrete and underside of units.

3.04 CLEANING PLASTIC UNITS

- A. Remove protective plastic sheeting within 24 hours of installation.
- B. Remove excess sealant or adhesive from joints and edges.
- C. Clean four days prior to date of scheduled inspection.

3.05 PROTECTION

- A. Protect installed units from traffic, subsequent construction operations or other imposed loads until concrete is fully cured.
- B. Touch-up, repair or replace damaged products prior to Date of Substantial Completion.

SECTION 32 3000

SITE FURNISHINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Site Signs
 - 2. Bollards
 - 3. Wheel Stops
 - 4. Site Bench
- B. Related Sections include the following:
 - 1. Division 2 Section "Earthwork" for excavation for installation of concrete footings.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: Provide a full size sample of each type of sign. Provide a color sample for all color options.
- C. Maintenance Data: For site furnishings to include in maintenance manuals.
- D. Shop Drawings: For each site sign provide a detailed scaled plan of each sign with the exact lettering, dimensions, and color options for each sign.

1.04 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of site furnishing through one source from a single manufacturer.

PART 2 – PRODUCTS

2.01 SIGNS

- A. General
 - 1. High Intensity Grade 0.08" aluminum
 - 2. Sign manufacture shall submit lettering and arrows of uniform type and size to provide optimal readability for approval prior to manufacturing the signs.
- B. Signs
 - 1. Refer to plans for size, lettering, symbols, and arrows.
 - 2. Handicap Parking signs shall comply with the US Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD).
 - 3. Do Not Enter signs shall comply with the US Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD).
- C. Accessible Parking Sign Posts
 - 1. Galvanized Sign Post: To be embedded in pipe bollard as indicated on drawings.
- D. Approved equal

2.02 BOLLARDS

- A. Steel Pipe Bollards: Concrete filled steel pipe with reveals.
 - 1. Shape: Round.
 - 2. Diameter: as indicated on drawings.
 - 3. Materials:
 - a. Steel Pipe: ASTM A53/A53M, extra strong.
 - b. Factory Finish: Primed.
 - 4. Mounting: as indicated.

- 5. HDPE Bollard Cover with Dome Top (Reliance Foundry Model R-7109, or equal)
 - a. Cover Color:
 - 1) Handicap Parking Spaces: Blue
 - 2) Other Areas: as selected by owner from manufactures full range of colors.
 - b. Tape Color: White
 - 1) Handicap Parking Areas: White
 - 2) Other Areas: as selected by owner from manufactures full range of colors.

2.03 WHEELS STOPS

- A. Recycled Rubber Parking Lot Wheel Stops
 - 1. Reliance Foundry or approved equal.
 - 2. Model R-2006
 - 3. Length 6-foot, width 6-inches, height 4-inches, weight 34 pounds
 - 4. Color: as selected by owner from manufacturers full range of colors.
 - 5. Concrete Installation with 6" lag bolt and lag shield provided by manufacturer.
 - 6. Asphalt Installation with 14" rebar spike provided by manufacturer.

2.04 SITE BENCH

- A. Keystone Ridge Designs, <u>www.keystoneridgedesigns.com</u>
 - 1. Custom Schenley 8' Bench with Back and Recycled Plastic Slats
 - 2. Model C-SC28 RPS
- B. Approved Equal.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, SIGNS

- A. Install all signs in accordance with PennDOT 408 Specification Section 900.
- B. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- C. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- D. Install site furnishings level, plumb, true, and positioned at locations indicated on drawings.

3.03 INSTALLATION, SITE FURNISHINGS

- A. Install site furnishings in accordance with approved shop drawings, and manufacturer's installation instructions.
- B. See Section 03 3000 for bollard infill and underground encasement.
- C. Provide level mounting surfaces for site furnishing items.
- D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

3.04 CLEANING

A. After completing site furnishing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

SECTION 32 9219 SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Seeding, mulching and fertilizer.
- D. Maintenance.

1.02 RELATED REQUIREMENTS

- A. Section 31 2200 Grading: Topsoil material.
- B. Section 31 2200 Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.
- C. Section 31 2323 Fill: Topsoil material.

1.03 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.05 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.01 SEED MIXTURE

- A. Seed Mixture: to match existing lawns.
- B. Not less than 95% germination, not less than 85% pure seed, and not more than 0.5% weed seed.

2.02 SOIL MATERIALS

A. Topsoil: Type _____ as specified in Section 31 2323.

2.03 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- B. Lime: ASTM C 602, agricultural limestone containing a minimum of 80 percent calcium carbonate, Class T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.
- C. Mushroom Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch sieve; not

exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

- 1. From agricultural materials, such as wheat straw bedded horse manure, hay, poultry manure, cottonseed meal, cocoa shells, sphagnum peat and gypsum, providing a consistent, formulated & homogeneous product.
- D. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.
- E. Erosion Fabric: North American Green SC150; Jute matting, open weave.
- F. Herbicide: EPA registered and approved of type recommended by manufacturer for intended application..

2.04 **TESTS**

- A. Provide analysis of topsoil fill under provisions of Section 01 4000.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, _____, soluble salt content, organic matter content, and pH value.
- C. Submit minimum 10 oz sample of topsoil proposed. Forward sample to approved testing laboratory in sealed containers to prevent contamination.
- D. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.
- B. Perform work of this section after receiving approval of owner and/or Architect.

3.02 PREPARATION

- A. Prepare subgrade in accordance with Section 31 2200.
- B. Place topsoil in accordance with Section 31 2200.
- C. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
- D. Protect adjacent and adjoining areas from hydroseeding, hydromulching, seeding, mulch, and compost installation/overspray.
- E. Protect grade stakes set by others until directed to remove them.
- F. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.03 SOIL AMENDMENTS

- A. Mushroom Compost
 - 1. Place 2" of Mushroom Compost on top of the topsoil layer and till the compost into the topsoil layer to a minimum depth of 4 inches.
- B. Fertilizer & Lime
 - 1. Shall be added in accordance with soil tests and the recommendations of an accredited soil testing laboratory.
 - 2. In the absence of a soil test, lime should be added at the rate of 6 tons per acre and fertilizer should be applied at the rate of 100 pounds of Nitrogen, 200 pounds of Phosphorus, and 200 pounds of Potassium per acre.
- C. Uniformly incorporate soil amendments into the seedbed.
- D. Seeding shall be performed within 3 days following installation of soil amendments.

3.04 SEEDING

- A. Apply seed at a rate indicated on the drawings evenly in two intersecting directions. Rake in lightly
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting Season: March 15 to October 15.
- D. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- E. Following seeding, cover the seed with 1/4 to 1/2 inches of mushroom compost and rake the entire area lightly to ensure a good seed soil contact.
- F. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- G. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
- H. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.05 UNCHANGED SUBGRADES

- A. If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surfacesoil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - 2. Loosen surface soil to a depth of at least 6 inches.
 - 3. Till soil to a homogeneous mixture of fine texture.
 - 4. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
 - 5. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
 - 6. Follow the preparation sequence above for Soil Amendments, Fertilizer & Lime, Seeding, & Mulching.

3.06 TEMPORARY SEEDING

- A. Install temporary seeding, soil amendments, and mulch in accordance with the drawings.
- B. Temporary seeding shall be installed where disturbed areas will remain dormant for longer than 21-days, but less than one-year. If areas will remain dormant for longer than one-year, install permanent seeding.
- C. Temporary seeding shall be installed within 7-days after final grade is achieved on any portion of the site.
- D. Temporary mulching at occupied sites shall be in the form of erosion control matting, properly secured in accordance with the manufacturer's recommendations.
 - 1. Contractor's shall maintain the temporary cover of mulch on disturbed areas on a daily basis until temporary (grass) cover is established.

3.07 PROTECTION

- A. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- B. Cover seeded areas at occupied sites with erosion fabric.
- C. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- D. Secure outside edges and overlaps at 36 inch intervals with stakes.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.08 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will not pay for water.
- B. See Section 01 7000 Execution Requirements, for additional requirements relating to maintenance service.
- C. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition and until the completion of the project.
- D. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- E. Neatly trim edges and hand clip where necessary.
- F. Immediately remove clippings after mowing and trimming.
- G. Water to prevent grass and soil from drying out.
- H. Roll surface to remove minor depressions or irregularities.
- I. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- J. Immediately reseed areas that show bare spots.
- K. Protect seeded areas with warning signs during maintenance period.
- L. Remove non-degradable erosion-control measures once a uniform 70% perennial vegetative cover is established and approved by the authority have jurisdiction.

SECTION 32 9300 PLANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Topsoil bedding.
- C. New trees, plants, and ground cover.
- D. Mulch.
- E. Maintenance.

1.02 RELATED REQUIREMENTS

- A. Section 31 2200 Grading: Topsoil material.
- B. Section 31 2323 Fill: Topsoil material.

1.03 REFERENCE STANDARDS

- A. ANSI/ANLA Z60.1 American National Standard for Nursery Stock; 2004.
- B. ANSI A300 Part 1 American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices; 2008.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Nursery, Installer, and Landscape Designer qualifications.
- C. Maintenance Data: Include cutting and trimming method; types, application frequency, and recommended coverage of fertilizer.
- D. Submit list of plant life sources.
- E. Maintenance Contract.

1.05 QUALITY ASSURANCE

- A. Nursery Qualifications: Company specializing in growing and cultivating the plants with five years documented experience.
- B. Installer Qualifications: Company specializing in installing and planting the plants with five years experience.
- C. Maintenance Services: Performed by installer.
- D. Non-native, Invasive Plant Species: Do not introduce, grow, or cultivate plant species that are non-native to the ecosystem of the project site, and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

1.06 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- B. Protect and maintain plant life until planted.
- C. Deliver plant life materials immediately prior to placement. Keep plants moist.

1.08 FIELD CONDITIONS

- Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.
- B. Do not install plant life when wind velocity exceeds 30 mph.

1.09 WARRANTY

- A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- B. Provide one year warranty.
- C. Warranty: Include coverage for one continuous growing season; replace dead or unhealthy plants.
- D. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

1.10 MAINTENANCE

A. Provide a separate maintenance contract for the service and maintenance of work specified in this section for one years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 PLANTS

- A. Plants: Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.
- B. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- C. Provide trees and shrubs of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of trees and shrubs required, see plans for plant schedule. Trees and shrubs of a larger size may be used if acceptable to Engineer, with a proportionate increase in size of roots or balls.
- D. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.
- E. Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.
- F. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.
- G. If formal arrangements or consecutive order of trees, plants or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting

2.02 SOIL MATERIALS

A. Topsoil & : See Section 31 2323.

2.03 SOIL AMENDMENT MATERIALS

A. As specified in Section 32 9219.

2.04 MULCH MATERIALS

- A. Hardwood Mulch: wood ground bark, free of growth or germination inhibiting ingredients and deleterious material and suitable for use as a top dressing of trees and shrubs.
- B. Stone Mulch: River rock, smooth and rounded texture, naturally occuring river rock native to the project area, suitable for the use as landscaping mulch.
 - 1. Size: 1"-3"

2.05 ACCESSORIES

- A. Wrapping Materials: Burlap.
- B. Stakes: Softwood lumber, pointed end.
- C. Cable, Wire, Eye Bolts and Turnbuckles: Non-corrosive, of sufficient strength to withstand wind pressure and resulting movement of plant life.
- D. Plant Protectors: Rubber sleeves over cable to protect plant stems, trunks, and branches.

- E. Landscape Fabric: composite fabric, woven, needle punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz/sy, intended specifically for landscaping separation.
- F. Landscape Edging: Commercial grade steel edging with anchor stakes, power coated finish, 12 gauge thickness, color to be selected by owner from manufacturers full range of colors,
- G. Tree Protectors: Metal with galvanized rings.

2.06 SOURCE QUALITY CONTROL

A. Provide analysis of topsoil; comply with requirements of Section 01 4000.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared subsoil are ready to receive work.
- B. Verify that required underground utilities are available, in proper location, and ready for use.

3.02 PREPARATION OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.
- C. Scarify subsoil to a depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.
- D. Dig pits and beds 6 inches larger than plant root system.

3.03 PLACING TOPSOIL

- A. Install topsoil from subgrade to finish grade in accordance with Section 31 2323.
- B. Install topsoil and soil amendments in accordance with Section 31 9219.

3.04 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after initial raking of topsoil.
- C. Mix thoroughly into upper 2 inches of topsoil.
- D. Lightly water to aid the dissipation of fertilizer.

3.05 PLANTING

- A. Place plants for best appearance.
- B. Place plants for best appearance for review and final orientation by the Owner and Architect.
- C. Set plants vertical.
- D. Remove non-biodegradable root containers.
- E. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth of 6 inches under each plant. Remove burlap, ropes, and wires, from the root ball.
- F. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.
- G. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

3.06 PLANT RELOCATION AND RE-PLANTING

- A. Relocate plants as indicated by Architect.
- B. Replant plants in pits or beds, partly filled with prepared topsoil mixture, at a minimum depth as indicated on drawings under each plant. Remove burlap, ropes, and wires, from the root ball.
- C. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch layers. Maintain plant materials in vertical position.
- D. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

3.07 INSTALLATION OF ACCESSORIES

- A. Place stone, where indicated on drawings.
- B. Wrap deciduous shade and flowering tree trunks and place tree protectors.
- C. Landscape edging: install per manufacturers instructions and recommendations providing all necessary stakes and and accessories required.

3.08 PLANT SUPPORT

- A. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:
 - 1. Tree Caliper: 1 inch; Tree Support Method: 1 stake with one tie
 - 2. Tree Caliper: 1 to 2 inches; Tree Support Method: 2 stakes with two ties
 - 3. Tree Caliper: 2 to 4 inches; Tree Support Method: 3 guy wires with eye bolts and turn buckles
 - 4. Tree Caliper: Over 4 inches; Tree Support Method: 4 guy wires with eye bolts and turn buckles

3.09 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. Plants will be rejected if a ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

3.10 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will not pay for water.
- B. Provide a separate maintenance contract for specified maintenance service.
- C. Maintain plant life immediately after placement and until plants are well established and exhibit a vigorous growing condition. Continue maintenance until termination of warranty period.
- D. Irrigate sufficiently to saturate root system and prevent soil from drying out.
- E. Cultivate and weed plant beds and tree pits.
- F. Remove dead or broken branches and treat pruned areas or other wounds.
- G. Neatly trim plants where necessary.
- H. Immediately remove clippings after trimming.
- I. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions.
- J. Control insect damage and disease. Apply pesticides in accordance with manufacturers instructions.
- K. Remedy damage from use of herbicides and pesticides.
- L. Replace mulch when deteriorated.
- M. Maintain wrappings, guys, turnbuckles, and stakes. Adjust turnbuckles to keep guy wires tight. Repair or replace accessories when required.