

PROJECT MANUAL

APRIL 22, 2024

**BUILDING RENOVATIONS
TO
JOHN GREENE ELEMENTARY SCHOOL
FOR
WARWICK PUBLIC SCHOOLS
WARWICK, RHODE ISLAND**



**SACCOCCIO & ASSOCIATES, INC.
ARCHITECTS**



**1085 PARK AVENUE
CRANSTON, RHODE ISLAND**

PROJECT NO. 23071

WARWICK PUBLIC SCHOOLS BID # 24-0017

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INVITATION TO BID

Warwick Public Schools Bid No. 24-0017

Project: Building Renovations to
John Greene School
51 Draper Avenue, Warwick, RI 02889

Owner: Warwick Public Schools
69 Draper Avenue
Warwick, Rhode Island

Architect: Saccoccio & Associates, Inc.
1085 Park Avenue
Cranston, Rhode Island 02910-3144
Tel:(401) 942-7970

Completion
Time:

- Expected award of Contract and delivery of a Notice to Proceed is approximately the end of May 2024.
- Ordering of products, coordination and preparatory work is to commence within seven days after receipt of the Notice to Proceed.
- Construction at the site can commence on June 26, 2024.
- Substantial completion date is August 18, 2024.
- Final Completion of all work is to be August 25, 2024.

General or trade Contractors are invited to submit a sealed lump sum bid proposal for the above referenced project in accordance with the requirements of the Bidding Documents dated April 22, 2024 and the following instructions.

The Owner will receive electronic bids until **Thursday, May 16, 2024 by 9:00 A.M.** through Bidnetdirect.com. Bids will be opened publicly and read aloud at the John Greene Building, 51 Draper Avenue, Warwick, RI, 02889 – Office #8 at this specified date and time. Interested parties are invited to attend.

Refer to "Instructions To Bidders" of the Bid Documents for additional bidding requirements.

A mandatory Pre-Bid Site Visit will be held on **Tuesday, April 30, 2024 at 3:15 P.M.** for pre-qualified Contractors. No other visits to the project site will be conducted.

The deadline for submitting questions to Bidnetdirect.com is **11:00 A.M., Wednesday, May 8, 2024.**

Bid security in the amount of ten percent (10%) of the bid must accompany each bid. Bid security shall be in the form of bid bond or a certified check payable to the City of Warwick. Beneficiary of the bond shall be the City of Warwick.

A Performance Bond of one hundred percent (100%) of the contract price and a Labor and Material Payment Bond of one hundred percent (100%) of the contract price with a satisfactory surety company will be required of the successful bidder.

Bidder's attention is referred to the State requirements pertaining to conditions of employment to be observed, including Workmen's Compensation, Equal Employment Opportunity, and Minority Business Enterprises. Attention is also called to the fact that not less than the minimum wage rates as hereinafter set forth shall be paid on this project, in accordance with those prevailing wages on file with the Rhode Island Department of Labor and Training, Prevailing Wage Unit. It is the Contractor's responsibility to use the current Prevailing Wage table that is in effect on the Bid issuance date for this project which is included in this Project Manual. These wage rates are applicable for the duration of the contract. The table may also be obtained at the Rhode Island Department of Labor and Training web site www.dlt.state.ri.us.

The Owner reserves the right to waive irregularities and to reject any or all bids, whole or in part, to waive any informalities or defects in any or all bids and to make awards deemed to be in the best interest of the Owner.

DOCUMENT 00 21 13

INSTRUCTIONS TO BIDDERS

AIA Document A701, Instructions to Bidders - 2018 Edition is included, following this page, as an integral part of the Bid Document. Provisions which are not amended or supplemented remain in full force and effect.

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AIA® Document A701™ – 2018

Instructions to Bidders

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

Warwick Public Schools
Building Renovations to
John Greene School
51 Draper Avenue, Warwick, RI 02889

THE OWNER:
(Name, legal status, address, and other information)

Warwick Public Schools
69 Draper Avenue
Warwick, R.I. 02889
Telephone Number: (401) 734-3033

THE ARCHITECT:
(Name, legal status, address, and other information)

Saccoccio & Associates, Inc.
1085 Park Avenue
Cranston, RI 02910
Telephone Number: 401-942-7970
Fax Number: 401-942-7975

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

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

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

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

ARTICLE 1 DEFINITIONS

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

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

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

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

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

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

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

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

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

ARTICLE 2 BIDDER'S REPRESENTATIONS

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

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

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

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

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

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

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

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

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

§ 3.2 Modification or Interpretation of Bidding Documents

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

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids. *(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)*

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

§ 3.3 Substitutions

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

§ 3.3.2 Substitution Process

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

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

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

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

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

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

§ 3.4 Addenda

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

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

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

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

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

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

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

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

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

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

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

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

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

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

§ 4.2 Bid Security

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

(Insert the form and amount of bid security.)

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount

of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

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

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

§ 4.3 Submission of Bids

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

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

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

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

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

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

§ 4.4 Modification or Withdrawal of Bid

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

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

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

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

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

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

§ 5.2 Rejection of Bids

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

§ 5.3 Acceptance of Bid (Award)

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

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

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

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

§ 6.2 Owner's Financial Capability

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

§ 6.3 Submittals

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

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

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

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

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

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

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

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

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

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

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

§ 7.2 Time of Delivery and Form of Bonds

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

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

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

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

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

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

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

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

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

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

.5 Drawings

Number	Title	Date
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.6 Specifications

Section	Title	Date	Pages
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.7 Addenda:

Number	Date	Pages
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.8 Other Exhibits:

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

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

The Sustainability Plan:

Title	Date	Pages
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Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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.9 Other documents listed below:

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

SECTION 00 31 19

INFORMATION AVAILABLE TO BIDDERS

A. Hazardous Material:

Various suspected asbestos containing materials are being tested in the building.

1. The Hazardous Materials Inspection Report will be included in a forthcoming Addendum.

B. Contractor Notification of Asbestos-Containing Materials/Presumed Asbestos-Containing Materials – 2024.

Documents are included following this page reporting in accordance with OSHA and State Laws a list of all Asbestos-Containing Materials/Presumed Asbestos-Containing Materials located in the vicinity of construction.

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Warwick Public Schools
John Greene School 2024 Project
Health and Safety, COVID-19, Asbestos, Confined Space, Lead Paint, Dust Control

Health and Safety, COVID-19, Asbestos, Confined Space, Lead Paint, Dust Control: The General Contractor must strictly adhere to and meet these contract specifications along with OSHA, NIOSH, RI Dept. of Health Rules and Regulations for Asbestos Control 216-RICR-50-15-1, EPA AHERA 40 CFR Part 763 Asbestos-Containing Materials in Schools; Final Rule and Notice, Renovation, Repair and Painting (RRP) regulations, RI Dept. of Health Rules and Regulations for Lead Poisoning Prevention R23-24.6-PB, OSHA 29 CFR 1910.1053, as well as any other federal, state, and local regulations. Where there exists overlap of these regulations, the most stringent one applies.

All contractors performing work on Warwick Public Schools property shall adhere to COVID-19 current safety protocols established by Warwick Public Schools, Rhode Island Dept. of Health, and Federal agencies when working inside Warwick Public School buildings.

All contractors performing work in confined spaces shall strictly adhere to and meet these contract specifications along with OSHA Confined Space Regulations, as well as any other federal, state, and local regulations. Where there exists overlap of these regulations, the most stringent one applies.

Warwick Public Schools
Dept. of Buildings & Grounds, 150 Draper Avenue, Warwick, RI 02889
Asbestos-Containing Materials/Presumed Asbestos-Containing Materials
Contractor Notification 2024

John Greene School
51 Draper Avenue, Warwick, RI 02889

asbestos pipe/fitting/elbow insulation;
asbestos floor tile/floor tile mastic,
asbestos chalkboard glue daubs,
asbestos vinyl wall covering,
asbestos transite wallboard,
asbestos boiler breeching insulation,
asbestos 1'x1' acoustical ceiling tile glue daubs.

presumed asbestos black window sills;
presumed asbestos duct flex connectors;
presumed asbestos boiler foundation/floor.

DOCUMENT 00 41 13

BID FORM

Warwick Public Schools Bid No. 24-0017

Date: _____

Project: Building Renovations to
John Greene School
51 Draper Avenue, Warwick, RI 02889

Bid to: Warwick Public Schools
69 Draper Avenue
Warwick, Rhode Island 02889

Architect: Saccoccio & Associates, Inc.
1085 Park Avenue
Cranston, Rhode Island 02910-3144
Tel:(401) 942-7970

Submitted by:

Company Name: _____

Address: _____

Telephone: _____

Fax: _____

Contact: _____

License Number:
(If Applicable) _____

1. BID

Having examined the Place of The Work and all matters referred to in the Instructions to Bidders, and in the Bidding Documents prepared by Saccoccio & Associates, Inc., Architect for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum noted below:

_____ (\$ _____.)
(written, and numerically)

We have included the Bid Security Deposit.

2. ALLOWANCES

We have included the specified Allowances, from Section 01 21 00 in Division 1 of the Specifications, in the above Bid Sum as follows:

Allowance No. 1 - Signage One thousand dollars (\$ 1,000.00)

3. UNIT PRICES

We propose the following Unit Prices for specific portions of the Work as listed. These Unit Prices shall be for additions to or subtractions from the Base Bid work and shall be performed under the Contract during the entire life of the Contract.

<u>Item Description</u>	<u>Unit Quantity</u>	<u>Unit Value</u>
a. Remove existing ACM elbow or tee pipe fitting insulation and encapsulate surfaces.	One	\$ _____
b. Remove existing asbestos floor tile & mastic and provide new VCT flooring.	10 Square Feet	\$ _____

4. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for sixty (60) calendar days from the bid closing date. If the Owner accepts this bid within the time stated above, we will:

- Execute the Agreement subject to compliance with the Invitation to Bid.
- Furnish the required bonds in compliance with amended provisions of the Instructions to Bidders.
- Commence work within seven (7) days after the signing of the Contract.

5. BID SECURITY DEPOSIT

If this bid is accepted within the time stated, and we fail to commence the Work, or we fail to provide the required Bonds, the Bid Security Deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

In the event our bid is not accepted within the time stated above, the required Bid Security Deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

6. CONTRACT TIME

If this Bid is accepted, we will follow the schedule noted below:

- Expected award of Contract and delivery of a Notice to Proceed is approximately the end of May 2024.
- Ordering of products, coordination and preparatory work is to commence within seven days after receipt of the Notice to Proceed.
- Construction at the site can commence on June 26, 2024.
- Substantial completion date is August 18, 2024.
- Final Completion of all work is to be August 25, 2024.

7. ADDENDA

The following Addenda (if any) have been received. The modifications to the Bid Documents noted in the Addenda have been considered and all costs are included in the Bid Sum.

Addendum No. 1, dated _____

Addendum No. 2, dated _____

Addendum No. 3, dated _____

8. BID FORM SIGNATURE(S)

(Bidder's name)

Title: _____

Corporate Seal:

9. CERTIFICATION OF SITE REVIEW SIGNATURE

By signing below, the Owner of the Bidding firm certifies that he/she has visited all the sites included in this project and has observed the existing roof conditions. No compensation for extra work on behalf of the Contractor will be considered for inconsistencies or obstructions that would have been determined by visual observation prior to bidding.

(Owner's signature)

END OF DOCUMENT

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DOCUMENT 00 43 13

BID BOND

AIA Document A310 - Bid Bond, 2010 Edition - Electronic Format, is included, following this page, as an integral part of the Bid documents, for use in fulfilling Bid Security requirements in lieu of submitting a certified check.

END OF DOCUMENT

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AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Warwick Public Schools
69 Draper Avenue
Warwick, R.I. 02889

BOND AMOUNT: \$

PROJECT:

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

Warwick Public Schools
Building Renovations to
John Greene School
51 Draper Avenue, Warwick, RI 02889

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

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

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or

ADDITIONS AND DELETIONS:

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

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

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

Init.

legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this day of ,

_____	_____
<i>(Witness)</i>	<i>(Contractor as Principal)</i> <i>(Seal)</i>
_____	_____
	<i>(Title)</i>
_____	_____
<i>(Witness)</i>	<i>(Surety)</i> <i>(Seal)</i>
_____	_____
	<i>(Title)</i>

DOCUMENT 00 45 13

CONTRACTOR'S QUALIFICATION STATEMENT

AIA Document A305, Contractor's Qualification Statement - Electronic Format, 1986 Edition, is included, following this page, as an integral part of the Bid documents, for use in evaluating the qualifications of Contractors.

The numerical low bidder will be required to complete and submit this form for evaluation.

END OF DOCUMENT

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AIA[®] Document A305[™] – 1986

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:

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

- Corporation
- Partnership
- Individual
- Joint Venture
- Other

NAME OF PROJECT: *(if applicable)*

Warwick Public Schools
Building Renovations to
John Greene School
51 Draper Avenue, Warwick, RI 02889

TYPE OF WORK: *(file separate form for each Classification of Work)*

- General Construction
- HVAC
- Electrical
- 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:

§ 1.3.3 President's name:

§ 1.3.4 Vice-president's name(s)

ADDITIONS AND DELETIONS:

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

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

This form is approved and recommended by the American Institute of Architects (AIA) and The Associated General Contractors of America (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

§ 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:

§ 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

§ 2 LICENSING

§ 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

§ 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

§ 3 EXPERIENCE

§ 3.1 List the categories of work that your organization normally performs with its own forces.

§ 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

§ 3.2.1 Has your organization ever failed to complete any work awarded to it?

§ 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

§ 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

§ 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);

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 on page one?

§ 5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

§ 5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

§ 6 SIGNATURE

§ 6.1 Dated at this day of

Name of Organization:

By:

Title:

§ 6.2

M being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this day of

Notary Public:

My Commission Expires:

DOCUMENT 00 52 13

AGREEMENT FORM

AIA Document A101 Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum - 2017 Edition, and as amended, forms the basis of Contract between the Owner and Contractor, and is included, following this page, as an integral part of the Bid documents. Provisions that are not amended or supplemented remain in full force and effect.

END OF DOCUMENT

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 **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)

Warwick Public Schools
69 Draper Avenue
Warwick, R.I. 02889
Telephone Number: (401) 734-3033

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

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

Warwick Public Schools
Building Renovations to
John Greene School
51 Draper Avenue, Warwick, RI 02889

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

Saccoccio & Associates, Inc.
1085 Park Avenue
Cranston, RI 02910
Telephone Number: 401-942-7970
Fax Number: 401-942-7975

The Owner and Contractor agree as follows.

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

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

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

Init.

TABLE OF ARTICLES

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

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

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

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

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

§ 3.3 Substantial Completion

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

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

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

[] By the following date:

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

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

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

ARTICLE 4 CONTRACT SUM

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

§ 4.2 Alternates

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

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

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

Item	Price	Conditions for Acceptance
------	-------	---------------------------

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

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

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

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

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

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

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

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

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the First day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the Fifteenth day of the following 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 Forty-five (45) days after the Architect receives the Application for Payment.

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

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

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

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

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

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

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

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

§ 5.1.7 Retainage

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

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

10 percent

§ 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.)

To be requested in writing by the General Contractor to the Architect.

§ 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.)

Remaining retainage to be withheld until Punch List work is 100 percent complete.

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

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

§ 5.2 Final Payment

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

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

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

§ 5.3 Interest

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

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

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

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

(Check the appropriate box.)

Arbitration pursuant to Section 15.4 of AIA Document A201–2017

Litigation in a court of competent jurisdiction

Other *(Specify)*

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

ARTICLE 7 TERMINATION OR SUSPENSION

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

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

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

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

ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.2 The Owner’s representative:

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

§ 8.3 The Contractor’s representative:

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

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

§ 8.5 Insurance and Bonds

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

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

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

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

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

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

(Insert the date of the E203-2013 incorporated into this Agreement.)

.5 Drawings

Number	Title	Date
--------	-------	------

.6 Specifications

Section	Title	Date	Pages
---------	-------	------	-------

.7 Addenda, if any:

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

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

.8 Other Exhibits:

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

Init.

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

The Sustainability Plan:

Title	Date	Pages
-------	------	-------

Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

.9 Other documents, if any, listed below:

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

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

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

Init.

DOCUMENT 00 61 13

PERFORMANCE BOND; PAYMENT BOND

1. PERFORMANCE BOND

AIA Document A312 - Performance Bond - 2010 Edition is included, following this page, as an integral part of the Bid documents, and issues of this form, signed and executed by the successful Bidder and Surety, will be bound into the executed Contract copies of the Project Manual.

2. PAYMENT BOND

AIA Document A312 - Payment Bond - 2010 Edition is included, following this page, as an integral part of the Bid Documents, and issues of this form, signed and executed by the successful Bidder and Surety, will be bound into the executed Contract copies of the Project Manual

END OF DOCUMENT

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AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Warwick Public Schools
69 Draper Avenue
Warwick, R.I. 02889

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

Warwick Public Schools
Building Renovations to
John Greene School
51 Draper Avenue, Warwick, RI 02889

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

None

See Section 16

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

Signature: _____

Name and

Title:

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

SURETY

Company: (Corporate Seal)

Signature: _____

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 14 Definitions

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

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

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

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

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

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

§ 16 Modifications to this bond are as follows:

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

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____
Signature: _____
(Corporate Seal)

Company: _____
Signature: _____
(Corporate Seal)

Name and Title: _____
Address: _____

Name and Title: _____
Address: _____



AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Warwick Public Schools
69 Draper Avenue
Warwick, R.I. 02889

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

Warwick Public Schools
Renovations to
Norwood Elementary School
266 Norwood Avenue, Warwick, RI 02888

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

None

See Section 18

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

Signature:

SURETY

Company:

(Corporate Seal)

Signature:

Name and

Title:

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

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Init.

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

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

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

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

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

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

§ 16 Definitions

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

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

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

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

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

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

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

§ 18 Modifications to this bond are as follows:

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

CONTRACTOR AS PRINCIPAL

Company: _____
Signature: _____
(Corporate Seal)

SURETY

Company: _____
Signature: _____
(Corporate Seal)

Name and Title: _____
Address: _____

Name and Title: _____
Address: _____

DOCUMENT 00 65 19.16

WAIVER OF LIEN FORM

The Waiver of Lien Form is included, following this page, as an integral part of the Contract documents. A copy with completed information must be submitted with the second and each succeeding Application for Payment.

WAIVER OF LIEN FORM
Material or Labor

Construction Project Title: _____

General Contractor: _____

Subcontractor/Supplier: _____

General Contractor's previous Application No: _____

General Contractor's previous Application Date: _____

Schedule of Values Line Item No.: _____

DESCRIPTION OF WORK Heading: _____

Total payment Received to Date:
\$ _____

The undersigned Representative of the above Subcontractor/Supplier has been contracted by the above General Contractor to furnish materials, or labor, or both, as included in the approved Schedule of Values under the Line Item No., and DESCRIPTION OF WORK heading indicated above, for the Construction Project listed above.

The undersigned acknowledges receipt of payment, under this Line Item No., and DESCRIPTION OF WORK heading, and hereby waives and releases any and all lien, or claim or right to lien, on the Construction Project listed above, and premises, under the statutes of the State of Rhode Island, relating to Mechanics Liens, on account of materials, or labor, or both, furnished, or which may be furnished, by the undersigned to, or on account of, the above numbered and dated Application and Certificate for Payment.

Signed this month of _____ day of _____, 20__.

(signature)

(company/firm name)

END OF DOCUMENT

DOCUMENT 00 65 19.18

**AFFIDAVIT OF GENERAL CONTRACTOR THAT ALL SUBCONTRACTORS,
SUPPLIERS AND LABORERS HAVE BEEN PAID AND HOLD HARMLESS CLAUSE**

The affidavit is included, following this page, as an integral part of the bid documents, for submittal with all applications for payment.

DOCUMENT 00815

AFFIDAVIT OF GENERAL CONTRACTOR
THAT ALL SUBCONTRACTORS, SUPPLIERS AND LABORERS
HAVE BEEN PAID: AND HOLD HARMLESS CLAUSE

To: ??????????????

The undersigned hereby deposes, says and makes affidavit under oath that he/she is _____ of _____ and further certifies that as of today's date all monies previously advanced pursuant to requisitions of the Contractor in connection with the Project known as Building Renovations to John Greene School have been paid to or are being held for and will be paid to the subcontractors, laborers, or suppliers: that there are no further amounts owing to the knowledge of the undersigned other than as set forth in the current requisition, a copy of which is attached hereto, and that only materials, fixtures, and equipment to which undersigned has absolute title have been used in the project. Further, the undersigned **HEREBY HOLDS HARMLESS THE CITY OF WARWICK, AND ALL COMMITTEES, BOARDS, DEPARTMENTS AND AGENCIES THEREUNDER, AND AGREES TO INDEMNIFY SAME FOR ANY ACTION OR SUIT BROUGHT BY ANY SUBCONTRACTOR, LABORER, OR SUPPLIER FOR THE PAYMENT OF ANY SUMS DUE RELATIVE TO THE AFORESAID PROJECT.** Said Hold Harmless Clause and Indemnification shall cause the undersigned to shield the City of Warwick and all committees, boards, departments and agencies from all attachments, chattel mortgages, and all liens, whatsoever, sought by subcontractors, laborers and/or suppliers for collection of monies allegedly due said parties for work performed on the aforesaid Project.

On the _____ day of _____, 20____, before me
appeared _____, where upon oath said
property executed the foregoing Affidavit as their free act and deed.

NOTARY

My commission expires:

DOCUMENT 00 72 13

GENERAL CONDITIONS

AIA Document A201, General Conditions of the Contract for Construction - 2017 Edition, is included, following this page, as an integral part of the Bidding and Contract Documents. Provisions which are not amended or supplement remain in full force and effect.

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AIA[®] Document A201[™] – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Warwick Public Schools
Building Renovations to
John Greene School
51 Draper Avenue, Warwick, RI 02889

THE OWNER:

(Name, legal status and address)

Warwick Public Schools
69 Draper Avenue
Warwick, Rhode Island 02889

THE ARCHITECT:

(Name, legal status and address)

Saccoccio & Associates, Architects
1085 Park Avenue, Cranston, Rhode Island 02910
Tel: 401-942-7970
www.sa-architects.com

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ADDITIONS AND DELETIONS:

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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.

14 TERMINATION OR SUSPENSION OF THE CONTRACT

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init.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents consist of the Agreement between the Owner and Contractor (hereinafter, 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 include the advertisement or invitation to bid, Instructions to Bidders, sample forms, information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, and Addenda relating to those documents.

In the event of any conflict among the Contract Documents, the Documents shall be construed according to the following priorities:

§ 1.1.2 The Contract

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

§ 1.1.3 The Work

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

§ 1.1.4 The Project

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

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

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

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by

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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. All Work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of this Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others. Should the Drawings or the Specifications disagree in themselves or with each other, the Contractor shall provide the better quality or greater quantity of Work unless otherwise directed by written addendum to the Contract.

§ 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. The Contractor and all Subcontractors shall refer to all of the Drawings, including those showing primarily the Work of the mechanical, electrical and other specialized trades, and to all of the Sections of the Specifications, and shall perform all Work reasonably inferable therefrom as being necessary to produce the indicated results.

§ 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.

§ 1.2.4 All indications or notations which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

§ 1.2.5 Where codes, standards, requirements and publications of public and private bodies are referred to in the Specifications, references shall be understood to be to the latest revision prior to the date of receiving bids, except where otherwise indicated.

§ 1.2.6 Where no explicit quality or standards for materials or workmanship are established for Work, such Work is to be of good quality for the intended use and consistent with the quality of the surrounding Work and of the construction of the Project generally.

§ 1.2.7 All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's written or printed directions and instructions unless otherwise indicated in the Contract Documents.

§ 1.2.8 All drawings are diagrammatic and indicate general arrangement of systems and equipment, except when specifically dimensioned or detailed. For exact locations of building elements, refer to dimensioned drawings. Field measurements take precedence over dimensioned drawings. Intention is to show size, capacity, approximate location, direction and general relationship of one work phase to another, but not exact detail or arrangement. Installation of all systems and equipment is subject to clarification as indicated in reviewed shop drawings and field coordination drawings.

Dimensions indicated on contract drawings are limiting dimensions. Do not use equipment exceeding dimensions indicated or equipment or arrangements that reduce required clearances or exceed specified maximum dimensions.

§ 1.2.9 The Mechanical, Plumbing, Electrical and Fire Protection Drawings are diagrammatic only, and are not intended to show the alignment, physical locations or configurations of such Work. Such Work shall be installed without additional cost to the Owner to clear all obstructions, permit proper clearances for the Work of other trades, and present an orderly appearance where exposed. Prior to beginning such Work, the Contractor shall prepare coordination drawings showing the exact alignment, physical location and configuration of the Mechanical, Plumbing, Electrical and Fire Protection installations and demonstrating to the Contractor's satisfaction that the installations will comply with the preceding sentence. A copy of the drawings shall be submitted to the Architect, and the Contractor shall revise and resubmit the drawings if so directed by the Architect.

§ 1.2.10 Exact locations of fixtures and outlets shall be obtained from the Architect as provided in subparagraph 3.2.5 before the Work is roughed in; Work installed without such information from the Architect shall be relocated at the Contractor's expense.

§ 1.2.11 Test boring or soil test information included with the Contract Documents or otherwise made available to the Contractor was obtained by the Owner for use by the Architects in the design of the Project or Work. The Owner does not hold out such information to the Contractor as a completely accurate indication of subsurface conditions, and no claim for extra cost or extension of time resulting from a reliance by the Contractor on such information shall be allowed except as provided in subparagraph 3.7.4.

§ 1.2.12 Where the Work is to fit with existing conditions or work to be performed by others, the Contractor shall fully and completely join the Work with such conditions or work, unless otherwise specified. Owner provided drawings showing existing conditions or construction are based on available documents and are not guaranteed to show actual existing conditions.

§ 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 All Drawings, Specifications and copies thereof furnished by the Owner are and shall remain the Owner's property. They are to be used only with respect to this Project and are not to be used on any other project without the prior written consent of the Owner. With the exception of one contract set for each party to the Contract, such documents are to be returned or suitably accounted for to the Owner at the completion of the Work. Submission 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 any 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.

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§ 1.8 Building Information Models Use and Reliance

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

ARTICLE 2 OWNER

§ 2.1 General

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

(Paragraph Deleted)

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Not Used.

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

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

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

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

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

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§ 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 available 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 except to the extent that the Contractor's review thereof reveals, or in the exercise of reasonable diligence should have revealed, any inaccuracy or incompleteness therein. The Owner makes no warranty as to the accuracy or completeness of such information. The Contractor shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness after receipt from the Contractor of a written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, 5 copies of Drawings and Project Manuals. All additional hard copies will be furnished upon request at the cost of reproduction.

§ 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. The Contractor shall resume the Work after such stoppage promptly upon written notice to do so from the Owner. The Contractor shall remain responsible for maintaining the progress of the Work and shall not be entitled to any increase in the Contract Sum or Contract Time. The Contractor shall be responsible for all costs incurred by the Owner attributable to such an order to stop the Work.

§ 2.5 Owner's Right to Carry Out the Work

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

The rights of the Owner hereunder are in addition to any other rights set forth in the Contract Documents or available at law or in equity.

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.

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§ 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 familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. The Contractor shall not be entitled to any change in the Contract Time or Contract Sum on account of its failure, or that of any Subcontractor, to comply with the foregoing requirements.

§ 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. 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. If the Contractor performs any construction activity that it knows or should know involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Architect, the Contractor shall assume appropriate responsibility for such performance and shall bear responsibility for the costs of any required correction.

§ 3.2.3 The Contractor is 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. 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. **§ 3.2.5** Any claim by the Contractor, in submitting their bid, they did not include all items as shown in the Contract Documents, will be given no consideration for an adjustment of any kind.

§ 3.2.6 The Contractor shall give the Architect timely notice of any additional Drawings, Specifications, or instructions required to define the Work in greater detail, or to permit the proper progress of the Work.

§ 3.2.7 The Contractor shall not proceed with any Work not clearly and consistently defined in detail in the Contract Documents, but shall request additional drawings or instructions from the Architect as provided in subparagraph 3.2.5. If the Contractor proceeds with such Work without obtaining further Drawings, Specifications or instructions, the Contractor shall correct Work incorrectly done at the Contractor's own expense.

§ 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 which shall not be less than such state of skill and attention generally rendered by the contracting profession for projects similar to the Project in scope difficulty and location.

The Contractor shall adequately staff the Project to properly and thoroughly manage, schedule and supervise all construction activities.

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 Contractor unless the Contract Documents give other specific instructions concerning these matters. Where the contract documents refer to particular construction means, methods, techniques, sequences or procedures or indicate or imply that such are to be used in the Work, such mention is intended only to indicate that the operations of the Contractor shall be such as to produce at least the quality of work implied by the operations described, by the actual determination of whether or not the described operations may be safely and suitable employed on the Work shall be the responsibility of the Contractor, who should notify the Architect in writing of the actual means, methods, techniques, sequences or procedures which will be employed on the Work, if these differ from those mentioned in the Contract Documents.

All loss, damage, or liability, or cost of correcting defective work arising from the employment of any construction means, methods, techniques, sequences, or procedures shall be corrected at Contractor's expense, notwithstanding that such construction means, methods, techniques, sequences, or procedures are referred to, indicated or implied by

the Contract Documents, unless the Contractor has given timely notice to the Owner and Architect in writing that such means, methods, techniques, sequences or procedures are not safe or suitable, and the Owner has then instructed the Contractor in writing to proceed at the Owner's risk.

§ 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. This obligation shall also extend to the presence on the Site of suppliers of materials or equipment, their employees, contractors, and agents engaged in the Work.

§ 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, and the Contractor shall ensure that all workers to be employed on the Project have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration (OSHA) of at least 10 hours. The Contractor shall be responsible for maintaining all safety precautions at and around the Project site. On the Owner's request, the Contractor shall permanently remove from the Project site any employee of the Contractor or any Subcontractor who fails to comply with the requirements of the Contract Documents or whose presence or behavior is deemed by the Owner to be adverse to the success of the Project or the Owner's interests.

§ 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 and, promptly after written notification of non-conformance, shall be repaired or replaced by the Contractor with Work conforming to such requirements.

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. 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.

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3.5.3

The Contractor shall be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The Architect may require the Contractor to produce reasonable evidence that a material meets such requirements, such as certified reports of past tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which, in the opinion of the Architect, would lead to a reasonable certainty that any material used, or proposed to be used, in the Work meets the requirements of the Contract Documents. All such data shall be furnished at the Contractor's expense. This provision shall not require the Contractor to pay for periodic testing of different batches of the same material, unless such testing is specifically required by the Contract Documents to be performed at the Contractor's expense.

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§3.5.4 The Contractor shall guarantee all Work for a period of one year after Date of Substantial Completion, or by the terms of any special guarantee required by the Contract Documents. The Contractor shall, upon written notice from the Owner, promptly correct defective Work or Work not in accordance with the Contract Documents.

§ 3.6 Taxes

The Owner is exempt from Rhode Island sales tax on products permanently incorporated in Work of the Project.

§ 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.

The Construction Documents are being submitted by the Owner to the Fire Marshal and the Building Inspection Department for review. The Owner will pay the costs for this review.
The Contractor will include all permit costs in their Bid. Contact the Local Building Inspector's Office to determine the permit costs.

§ 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. If any of the Work is required to be inspected or approved by any public authority, the Contractor shall cause such inspection or approval to be performed and shall comply with any instructions or corrections ordered by the public authority.

§ 3.7.3 If the Contractor performs Work it knows or should know 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

(Paragraph Deleted)

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. 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.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents.

(Paragraphs Deleted)

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ, in accordance with the Contract Documents, a competent superintendent and necessary assistants who shall be in attendance at the Project site at all times during performance of the Work until the date of Substantial Completion, and for such time thereafter as the Architect may determine to be necessary for the expeditious completion of the Work. The Contractor shall remove the superintendent if requested in writing by the Owner, and shall replace him/her with a competent person reasonably acceptable to Owner.

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.

§ 3.9.4 The Contractor shall coordinate and supervise the Work performed by Subcontractors to the end that the Work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. The Contractor and all Subcontractors shall at all times afford each trade, any separate contractor, or the Owner, every reasonable opportunity for the installation of Work and the storage of materials.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, within twenty (20) calendar days 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 Projector as requested by the Architect.

The construction schedule shall be in such form and contain such information as the Architect and Owner require. The construction schedule shall be resource loaded for the Contractor and all subcontractors, with each resource identified by name, description, unit of measure, and calendar assignment. For each class of work included in the Contractor's schedule of values, the construction schedule shall show the percentage of completion to be obtained and the total dollar value of the work to be completed as of the first of each month until Substantial Completion. All calculations shall be on the basis of work in place, but not including the value of materials delivered but not in place.

§ 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.

The Contractor's compliance with the construction schedule is a material obligation of the Contract.

§ 3.10.4 The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedule and shall promptly advise the Owner of any delays or potential delays. The construction schedule shall be updated every month (or more frequently if requested by the Owner) to reflect actual conditions (such updates are sometimes referred to in these General Conditions as "progress reports"). In the event any progress report indicates delays in achievement of any milestone date set forth in such schedule, the Contractor shall propose in written form an affirmative plan (the "Recovery Schedule") to correct the delay, including overtime and/or additional labor, if necessary, which Recovery Schedule shall indicate the date by which the progress of the Work will comply with the construction schedule, and shall be subject to the approval of the Owner and the Architect. In no event shall any progress report or Recovery Schedule constitute an adjustment in the construction schedule, Contract Time or any milestone date unless any such adjustment is agreed to by the Owner and authorized pursuant to a Change Order.

§ 3.10.5 In the event (i) that the performance of the Work, as of a milestone date, has not progressed or reached the level of completion required by the construction schedule, and (ii) the progress of the Work is not brought back into compliance with the construction schedule on the date proposed by the Recovery Schedule, or the Contractor otherwise fails to comply with the Recovery Schedule, the Owner shall have the right to order the Contractor to take

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corrective measures to expedite the progress of the Work, including, without limitation, (1) supplying additional manpower, equipment, and facilities, (2) working additional shifts or overtime, (3) working additional days, and (4) other similar measures (hereinafter referred to collectively as "Corrective Measures"). Such Corrective Measures shall continue until the progress of the Work complies with the stage of completion required by the Contract Documents.

§ 3.10.6 The Contractor shall not be entitled to an adjustment in the Contract Sum in connection with Corrective Measures required by the Owner under or pursuant to Section 3.10.5. The Owner may exercise the rights furnished the Owner under or pursuant to Section 3.10.5 as frequently as reasonably necessary to ensure that the Contractor's performance of the Work complies with the milestone dates set forth in the construction schedule.

§ 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. By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals the Contractor thereby represents that the Contractor has determined and verified all dimensions, quantities, field dimensions, relations to existing work, coordination with work to be installed later, coordination with information on previously accepted Shop Drawings, Product Data, Samples, or similar submittals and verification of compliance with all the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the Contractor. In reviewing Shop Drawings, Product Data, Samples, and similar submittals the Architect shall be entitled to rely upon the Contractor's representation that such information is correct and accurate.

§ 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. The accuracy of all such information is the responsibility of the Contractor. In reviewing Shop Drawings, Product Data, Samples, and similar submittals the Architect shall be entitled to rely upon the Contractor's representation that such information is correct and accurate.

§ 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. 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.

§ 3.12.11 When professional certification of materials, systems or equipment is required by the Contract Documents, the Owner shall be entitled to rely upon such certifications, and neither the Owner nor the Architect shall be expected to make an independent examination with respect to the performance of such materials, systems or equipment.

§ 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.

The right of possession of the premises and the improvements made thereon by the Contractor shall remain at all times with the Owner. The Contractor's right to entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents. The Owner shall not be liable to the Contractor, the Subcontractors, their employees, or anyone else with respect to the conditions of the premises, except only for a condition caused directly and solely by the negligence of
(Paragraph Deleted)

the

Owner.

§ 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 site.

§ 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 and may deduct all costs thereof from any payment due the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner, Owner's representatives, 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, including claims, damage, loss or expense attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the Work, caused in whole or in part by the negligent or wrongful 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, including those of indemnity, which would otherwise exist as to a party or person described in this section.

§ 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.

§ 3.18.3 The obligations of the Contractor under this paragraph 3.18 shall not extend to the liability of the Architect, the Architect's consultants, and agents or employees of any of them arising out of (1) the preparation of maps,

Drawings, opinions, reports, surveys, Change Orders, designs or Specifications, or (2) directions or instructions given by the Architect, the Architect's consultants and agents or employees of any of them, provided such instructions or directions are the primary cause of the injury or damage.

§ 3.18.4 The Owner and the Architect have acknowledged that nothing in the Architect's engagement implies any undertaking by the Architect for the benefit of or which may be enforced by the Contractor, its Subcontractors, or the surety of any of them; it being understood that the Architect's obligations are to the Owner and that, in performing such obligations, the Architect may increase the burdens and expense of the Contractor, its Subcontractors or the surety of any of them. Neither the Contractor, any Subcontractor, nor the surety of any of them shall bring any civil suit or other legal action against the Architect arising out of or in connection with the Project.

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 and Architect. Consent of the Owner 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 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

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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 Not Used

§ 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.

§ 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.

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§ 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.

§ 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 and legally permissible 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. No increase in the Contract Sum or Contract Time shall be allowed for such change.

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

§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Article 14 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor;
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the

Contract; and

(Paragraph Deleted)

- .3 the Owner may further assign the subcontract to a successor contractor or other entity.

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.

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§ 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 The Owner reserves the right to enter any part of the Project site at any time to inspect the Work or to perform other work with its own forces or separate contractors, or to address any emergency situation. Such access is not to be construed to mean partial occupancy by the Owner and no claim for increase in the Contract Time or Sum will be considered unless such Owner's contractors have delayed or damaged the Contractor's Work. The Contractor shall permit the Owner to place and install as much furniture, equipment and other material during the progress of the Work as is possible before completion of the various parts of the Work and agrees that such placing and installation of equipment shall not in any way evidence the completion or acceptance of the Work or any portion of it.

§ 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.

§ 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.

(Paragraph Deleted)

§ 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.

§ 7.2.2 Upon request of the Owner or the Architect, the Contractor shall without cost to the Owner submit to the Architect, in such form as the Architect may require, an accurate written estimate of the cost of any proposed extra Work or change. The estimate shall indicate the quantity and unit cost of each item of material, and the number of hours of work and hourly rate for each class of labor, as well as a description and the amounts of all other costs chargeable under the terms of this Article. Unit labor costs for the installation of each item of material shall be shown if required by the Architect. The Contractor shall promptly revise and resubmit each estimate if the Architect determines that it is not in compliance with the requirements of this Article, or that it contains errors of fact or mathematical errors. If required by the Architect, in order to establish the exact cost of new Work added or of previously required Work omitted, the Contractor shall obtain and furnish to the Architect bona fide proposals from recognized suppliers for furnishing any material included in such Work. Such estimates shall be furnished promptly so as to occasion no delay in the Work, and shall be furnished at the Contractor's expense. The Contractor shall state in the estimate any extension of time required for the completion of the Work if the change or extra work is ordered.

§ 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, and if the Contract Documents include a unit price for the work that is the subject of such directive, such unit price shall be the basis of the adjustment to the Contract Sum, unless the Owner, in its sole discretion, chooses another method. If, however, the Contract Documents do not include a unit price for such work, the adjustment shall be based on one of the following methods, as selected by the Owner:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices 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 proposed method of adjustment in the Contract Sum is based on unit prices that are stated in the Contract Documents, such unit prices shall be the basis of any adjustment to the Contract Sum, unless the Owner has chosen another method pursuant to subparagraph 7.3.3. If the proposed method of adjustment is not based on such unit prices and the Contractor objects to the proposed method of adjustment, the Contractor must notify the Architect of such objection in writing within five (5) calendar days from Contractor's receipt of the Construction Change Directive. Failure to so object will irrevocably

waive any such objections and claims on account of such method of adjustment, and the Construction Change Directive shall be deemed and shall constitute a Change Order. If the Contractor does so object, the adjustment to the Contract Sum shall be determined by the Architect 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 allowance for overhead and profit in accordance with the Clauses 7.3.11.1 through 7.3.11.6 below.

In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds, insurance and permit fees 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 deemed 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 all changes for any given trade.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner amounts for such changes in the Work shall not be included in Applications for Payment. Such amounts shall only be included in an Application for Payment after the adjustment for the Construction Change Directive has been included in a Change Order signed by the Owner and the Contractor. 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.

§ 7.3.11 The allowance for the combined overhead and profit is to be as listed below.

- .1 For the Contractor, for Work performed by the Contractor's own forces, 10 percent of the cost.
- .2 For the Contractor, for Work performed by the Contractor's Subcontractor, 6 percent of the amount due the Subcontractor.
- .3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 10 percent of the cost.
- .4 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.4.

- .5 Overhead and profit is to include the Contractor's project management and supervisory costs, all administrative expenses and personnel, change estimate preparation, mobilization, setup & break-down, meetings, all safety related costs, cleanup costs and storage costs pertaining to the changes in the work.
- .6 The fee increase to any permit required by the additional work is allowed to be added to the Change Order costs. However, the Contractor is required to submit proof that the additional fee was paid to the presiding authority.
- .7 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$500.00 be approved without such itemization.

§ 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.

§ 8.2.4 Unless specifically required by law, no payment under this Contract shall be due until the construction schedule, required by Section 3.10, and conforming to the requirements of the General Requirements has been accepted by the Architect.

§ 8.2.5 If the Architect in reviewing any Application for Payment determines that the amount of completed Work in place as certified by the Architect is less than 90% of the Work in place required by the Contractor's construction schedule or schedule of values provided for in Section 9.2, or that there have been delays to critical paths and the Contract completion date will not be met, or that, in the Owner's sole discretion, there is reasonable concern that the Work will not be Substantially Complete by the date required in the Contract Documents, the Contractor shall be required to submit a recovery schedule with a written description of the steps the Contractor intends to take to put the Project back on schedule. At the Owner's option, the Contractor shall take some or all of the following actions at no additional cost to the Owner:

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- .1 Increase the number of workers on the site, in such quantities and trades as will substantially eliminate the backlog of work;
- .2 Increase the number of working hours per shift, shifts per day, working days per week, amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate backlog of work; or
- .3 Reschedule activities so that the completion dates initially scheduled will be met.

§ 8.2.6 If the Architect has determined that the Contractor should be permitted to extend the time for completion as provided in paragraph 8.3, the calendar dates in the Progress Schedule shall be adjusted accordingly to retain their same relationship to the adjusted date of Substantial Completion, and the dollar value of Work to be completed as of the first of each month shall be adjusted prorata.

§ 8.2.7 If the Contractor fails to submit any Application for Payment in any month, the Architect shall, for the purpose of this evaluation of progress, certify separately to the actual value of the Work in place completed as of the first of the month to the best of the Architect's knowledge.

§ 8.2.8 Nothing herein shall limit the Owner's right to liquidated or other damages for delays by the Contractor or to any other remedy which the Owner may possess under other provisions of the Contract Documents or by law.

§ 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 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, and this shall be the Contractor's sole remedy for such delay. Under no circumstances will the Contractor be entitled to an increase in the Contract Sum, or to any other damages, on account of or in connection with any delay, regardless of the cause of such delay, and Contractor agrees not to make any claim for such damages, including, but not limited, claims for damages on account of having to perform out-of-sequence work, claims for damages on account of loss of production, and claims for damages on account of hindrances or interference with the work.

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

§ 8.3.3 No extension of time shall be granted because of seasonal or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the Contractor, whether occurring within the time originally scheduled for completion or within the period of any extension granted. There shall be no increase in the Contract Sum on account of any additional costs of operations or conditions resulting therefrom.

§ 8.3.4 The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner or the Architect on account of any delay in the commencement of the Work and/or any hindrance, delay or suspension of any portion of the Work, whether such delay is caused by the Owner, the Architect, or otherwise. The Contractor acknowledges that the Contractor's sole remedy for any such delay and/or suspension will be an extension of time as provided in this Article.

§ 8.4 Liquidated Damages

§ 8.4.1 It is expressly understood and agreed, by and between the Contractor and Owner, that the time for the completion of the Work described herein is a reasonable time for the completion of same, taking into consideration the average climatic range and usual industrial and/or residential conditions prevailing in this locality. If the said Contractor shall neglect, fail or refuse to complete the Work within the times herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner the amount stipulated in these Contract Documents, not as a penalty but as liquidated damages for such breach of contract, for each and every calendar day that the Contractor shall be in default after the time stipulated for completing the Work. The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be deducted by the Owner from periodic payments.

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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 maximum 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 in a proposed Change Order or Construction Change Directive so that, in the opinion of the Architect, application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner, 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, and shall be revised if later found by the Architect to be inaccurate. In addition, the Contractor shall submit to the Architect, at least 14 days before the first Application for Payment, a Cash Flow Schedule that shows the percentage completion to be obtained and the total dollar value of Work to be completed as of the first of each month until Substantial Completion. All calculations in the Cash Flow Schedule shall be on the basis of Work in place and shall exclude the value of materials delivered but not in place.

§ 9.2.1 The Cash Flow Schedule shall be based on an orderly progression of the Work allowing adequate time for each operation (including adequate time for submission and review of submittals) and leading to a reasonable certainty of Substantial Completion by the date established in the Agreement. The Cash Flow Schedule will be reviewed by the Architect for compliance with the requirements of the Contract Documents. Unless specifically required by law, no payment under this Contract shall be due until the Cash Flow Schedule has been reviewed and approved by the Architect. The Architect's review of the Cash Flow Schedule shall not impose any duty on the Architect or the Owner with respect to the timing, planning, scheduling or execution of the Work. In particular if the Contractor proposes a Cash Flow Schedule indicating a date of Substantial Completion which is earlier than the Contract Time the Contractor shall not be entitled to additional payment or compensation of any kind if for any reason the full Contract Time is required to achieve Substantial Completion of the Work.

§ 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. The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet.

§ 9.3.1.1 Each Application for Payment or periodic estimate requesting payment shall be accompanied at the owner's option by (1) a waiver of liens from each Subcontractor or (ii) a certificate from each Subcontractor stating that the Subcontractor has been paid all amounts due the Subcontractor on the basis of the previous periodic payment to the Contractor, or else stating the amount not so paid and the reason for the discrepancy. In the event of any such discrepancy, the Contractor shall furnish the Contractor's own written explanation to the Owner through the Architect. Such waiver or certificate shall be in a form acceptable to the Owner.

§ 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.

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§ 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. The Owner may deduct the amount of such costs from payments due the Contractor.

§ 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 Subject to the Contractor's compliance with Section 9.3 and the provisions of Section 9.6, the Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

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

§ 9.5 Decisions to Withhold Certification

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

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;

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- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the retainage currently held by the Owner would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.
- .8 failure of the Contractor or mechanical or electrical trade subcontractors to comply with requirements of the General Requirements for maintaining record drawings. The Contractor shall check record drawings each month. Written confirmation that the record drawings are current will be required by the Architect before approval of the Contractor's monthly payment requisition;
- .9 failure of the Contractor to provide required warranties under Section 9.3, claims for direct payment, or reasonable evidence indicating probable filing of such claims;
- .10 costs incurred by the Owner under Section 10.2.5;
- .11 failure of the Contractor to submit prerequisite documentation required by the General Requirements; or
- .12 liquidated damages due the Owner pursuant to Section 8.4.

§ 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 Not Used

§ 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. The Owner reserves the right to withhold payment to the Contractor, in whole or in part, for any or all of the reasons cited in Clauses 9.5.1.1 through 9.5.1.12.

§ 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. 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 Not Used

§ 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

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

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litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Not Used

(Paragraph Deleted)

§ 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.

In addition, Substantial Completion for the entire Project shall be achieved only when:

- .1 the Owner has beneficial occupancy and use of the entire Project for all its intended uses;
- .2 all Project systems included in the Work are operational and acceptable to the Owner;
- .3 all governmental inspections for the Project have been successfully completed, all governmental approvals and related paperwork have been delivered to the Owner, and final and unconditional certificates of occupancy for the entire Project have been delivered to the Owner,
- .4 the only remaining Work to be performed is minor in nature and the remaining Work may reasonably be performed without having a material adverse effect on or materially interfering with the Owner's occupancy and use of the Project and
- .5 all prerequisites to Substantial Completion defined in the Contract Documents have been completed.

§ 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 together with the estimated value of completing or correcting such items (the "Punchlist") and (2) the permits and certificates referenced in Section 13.5. The Architect shall have the right to modify and supplement the Punchlist, including the estimated value of completion or correction.

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 by the Architect. The certificate shall state the date of substantial completion, shall state any consequent responsibilities of the Contractor and the Owner in accordance with the Contract Documents. The Contractor shall complete and correct any incomplete and defective work within the number of calendar days stipulated in these Contract Documents.

§ 9.8.6 Services provided by the Architect to conduct more than three (3) inspections of completed Work or any inspections beyond thirty (30) calendar days after the date of substantial completion of any portion of the Work as stated in the Agreement shall be paid by the Contractor to the Owner. The Owner may deduct the cost of such services and inspections from payments due the Contractor.

§ 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. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner has accepted in writing the responsibilities assigned to it and the Contractor for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance. 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. 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. By Final Completion, the Contractor shall have completed its performance of all Punchlist items, completed all balancing of mechanical and other applicable systems and all seasonal system adjustments that are reasonably necessary to proper functioning of the completed Project, delivered to the Owner all operations and maintenance manuals and completed related training for such manuals, and delivered to the Owner all required warranties and guarantees.

§ 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 the Contractor fails to furnish such releases or waivers as the Owner reasonably requires to satisfy the Owner that there are no outstanding liens, the Owner may require the Contractor, as a condition of final payment and at the Contractor's expense, to furnish a bond satisfactory to the Owner to indemnify the Owner against any such liens.
(Paragraphs Deleted)

§ 9.10.3 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee for payment for Work performed and of all other claims of which the payee knew or should have known at the time of final payment, 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;
- .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; and
- .4 work or property of the Owner, its tenants, or other parties at or near the Project site with the Owner's permission.

§ 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, 10.2.1.3 and 10.2.1.4 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 foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18. Where the damage or loss presents an immediate danger to the public, the Owner, in its sole discretion and at the Contractor's expense, may promptly remedy such damage or loss without prior notice to the Contractor.

§ 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.

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10.2.9 The Contractor shall provide and maintain in good operating condition suitable and adequate fire protection equipment and services, and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the Work or by the local fire chief or fire

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marshal. The area within the site limits shall be kept orderly and clean, and all combustible rubbish shall be promptly removed from the site.

§ 10.2.10 The Contractor shall at all times protect excavations, trenches, buildings and materials from rain water, groundwater, backup or leakage of sewers, drains and other piping, and from water of any other origin and shall remove promptly any accumulation of water. The Contractor shall provide and operate all pumps, piping and other equipment necessary to this end.

§ 10.2.11 The Contractor shall remove snow and ice which might result in damage or delay.

§ 10.2.12 During the progress of the Work and at all times prior to the date of Substantial Completion or occupancy of the Work by the Owner, whichever is earlier, the Contractor shall provide temporary heat, ventilation, and enclosure, adequate to permit the Work to proceed in a timely fashion, and to prevent damage to completed Work or Work in progress, or to materials stored on the premises. The use of the permanent heating and/or ventilation systems for temporary heat and/or ventilation shall be subject to the prior written approval of the Owner and Architect.

§ 10.2.13 The Contractor shall install weather protection and furnish adequate heat in the protected area from November 1 to March 31 as necessary.

§ 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. The Contractor shall not cause or permit any introduction onto, under, or near the Owner's property of any hazardous materials or substances as defined by any applicable law, and shall not cause or permit any release, discharge, transportation, storage, or disposal of such materials or substances onto, under, or near the Owner's property or areas near the Owner's property. If the Contractor encounters or recognizes on the site any material known or reasonably believed to be hazardous, including but not limited to asbestos or polychlorinated biphenyl (PCB), the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. The Contractor and the Owner shall cooperate in implementing measures to remove or contain said material and the Contractor shall comply with all directions of the Architect in the implementation of such removal or containment.

§ 10.3.2 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 Article 10 or for any violation of applicable law related to the Contractor's noncompliance with the provisions of this Article 10.

§ 10.3.3 The parties anticipate that certain hazardous substances and/or materials may be discovered at the site. When such conditions are set forth in the Contract Documents, the Contractor acknowledges that such conditions have been considered in establishing the Contract Time and Contract Sum. No extension of the Contract Time or increase in the Contract Sum shall be claimed or allowed with respect to any hazardous substances or materials located at the site which were disclosed in the Contract Documents. The Contractor shall strictly comply with all laws, regulations, rules, orders, ordinances and the like related to the excavation, storage, removal and disposal of any such hazardous substances or materials.

§ 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 LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims

set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract

and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall include all major divisions of coverage, and shall be on a comprehensive general basis including Premises and Operations (including X-C-U), Owner's and Contractor's Protective, Products and Completed Operations, and Owned, Non-owned, and Hired Motor Vehicles. Such insurance shall be written for not less than any limits of liability required by law or those set forth in the Contract Documents, whichever is greater.

(Paragraph Deleted)

All insurance shall be written on an occurrence basis, unless the Owner approves in writing coverage on a claims-made basis. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and any further period during which coverage is required to be maintained after final payment by the Contract Documents. The Owner shall be named an Additional Insured on all policies.

Coverage for such liability insurance shall be provided by a company or companies reasonably acceptable to the Owner and authorized to do business in Massachusetts. Contractor shall furnish to Owner written confirmation as to the insurance carrier's most current financial ratings prior to commencing work.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

These certificates shall set forth evidence of all coverage required by Sections 11.1.1 and 11.1.2. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending limits of coverage.

§ 11.1.3.1 The Contractor shall be responsible for having acceptable insurance coverage provided by or on behalf of all Subcontractors, with such insurance to be similar to that required of the Contractor under the Agreement and these General Conditions. The Contractor shall not allow any Subcontractor to commence Work on the Project prior to the Contractor's receipt of certificates of insurance that are acceptable in form and limits to the Owner; the Owner shall have no obligation to pay the Contractor for any Work performed by a Subcontractor who has not supplied acceptable insurance certificates prior to starting its Work.

The Owner shall be named an additional insured on all such certificates.

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§ 11.1.3.2 All insurance policies shall contain provisions or endorsements necessary to assure coverage of claims by one insured against another. All required insurance policies are to be endorsed to state that the Contractor's policies shall be primary to all other insurance available to the Owner and other specified additional insureds for liability arising out of or resulting from the Contractor's operations under the Contract, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Owner's Project Manager, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.1.5 In no case shall the limits of liability be less than the following:

.1 General Liability of at least \$1,000,000 Bodily Injury and Property Damage Liability, Combined Single Limit with a \$3,000,000 Annual Aggregate Limit. Products and Completed Operations is to be maintained for up to 3 years after the completion of the project.

(Paragraph Deleted)

.2 Automobile Liability (applicable for any contractor who has an automobile operating exposure) of at least \$1,000,000 Bodily Injury and Property Damage per accident.

.3 Workers' Compensation Insurance as required by law.

.4 Builders' Risk Property Coverage for the full insurable value (completed value) including existing structure of the building under construction if applicable. It is to include "All Risk" insurance for physical loss or damage including theft.

.5 Property Coverage for materials and supplies being transported by the contractor, as the Town's Property Contract provides coverage for personal property within 1000 feet of the premises.

.6 Umbrella Liability of at least \$2,000,000/ occurrence, \$2,000,000/aggregate.

§ 11.2 OWNER'S LIABILITY INSURANCE The Contractor shall procure and pay for an Owner's policy of Owner's protective liability insurance insuring the Owner and its officers, employees and agents against claims which may arise from operations under the Contract or relating thereto.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 The Contractor shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. Coverage for such liability insurance shall be provided by a company or companies reasonably acceptable to the Owner. Contractor shall furnish to Owner written confirmation as to the insurance carrier's most current financial ratings prior to commencing work. Such insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the work and shall insure against the perils of fire and extended coverage and shall include "all risks" insurance for physical loss or **damage including without duplication, theft, vandalism and malicious mischief. This insurance shall also cover portions of** the Work stored off the site or in transit. If this insurance is written with stipulated amounts deductible, the Owner shall not be responsible for any difference between the payments made by the insurance carrier and the claim. The policy shall contain a provision that coverages afforded under policies will not be canceled or allowed to expire until at least 30 days' written notice has been given to the Owner. The Owner shall be named insured within the policy.

§ 11.3.2 The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.3 The Owner shall have the power to adjust and settle with its insurers any loss for which it has obtained insurance.

Upon the occurrence of an insured loss, the Owner and the Contractor shall cooperate with each other and with each other's insurer in the submission of claims and related information and the distribution of any insurance proceeds. If after such a loss no other special agreement is made, replacement of damaged work shall be covered by an appropriate change order.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder, each in the amount of 100% of the Contract Price, and each by a surety company qualified to do business under the laws of the State of Rhode Island and acceptable to the Owner. The attorney-in-fact who signs the bonds on behalf of the surety, must affix to each bond a certified and current copy of the power of attorney. The Performance and Payment Bonds shall be written in a form satisfactory to the Owner.

§ 11.4.2 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.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

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§ 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. 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. If the correction or repair of any of the Work is required to avoid impacts to the maintenance, operation or safety of any portion of the Project site or the Owner's property, the Owner reserves the right to undertake the repairs prior to notifying the Contractor or without waiting for the Contractor to respond, without waiving the Owner's rights under the warranties and the Owner's right to correct work under Section 2.5.

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

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

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the laws of the State of Rhode Island. 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. 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.

(Paragraph Deleted)

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

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

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

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

§ 13.4.4 The Contractor shall obtain and deliver promptly to the Architect any occupancy permit and any certificates of final inspection of any part of the Contractor's work and operating permits for any mechanical apparatus, such as elevators, escalators, boilers, air compressors, etc., which may be required by law to permit full use and occupancy of the premises by the Owner. Receipt of such permits or certificates by the Architect shall be a condition precedent to Substantial Completion of the Work.

§ 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.

§ 13.6 It is expressly agreed that the obligations of the Contractor hereunder arise out of contractual duties, and that the failure of the Contractor to comply with the requirements of the Contract Documents shall constitute a breach of contract, not a tort, for the purpose of applicable statutes of limitation and repose. Any cause of action which the Owner may have on account of such failure shall be deemed to accrue only when the Owner has obtained actual knowledge of such failure, not before.

§ 13.7 LIMITATION OF LIABILITY

§ 13.7.1 The Owner shall be liable, if ever, only to the extent of its interest in the Project; and no officer, director, partner, agent or employee of the Owner shall ever be personally or individually liable with respect to this Contract

or the Work. Each Subcontract shall include the foregoing limitation, which shall be effective if the Owner ever succeeds to the Contractor's rights and obligations under a Subcontract.

§ 13.8 DEFENSE OF SUITS

§ 13.8.1 The Contractor shall be responsible for, shall defend and pay all costs, attorneys' fees and liabilities both direct and indirect as a result of suits arising out of this Contract.

§ 13.8.2 Neither final acceptance nor occupation of the premises by the Owner shall relieve the Contractor of responsibility for all claims for labor, materials, and equipment arising out of this Contract.

§ 13.8.3 The Contractor shall indemnify and hold harmless the Owner and the Architect and their agents and employees from and against all claims, damages, losses, and expenses including attorneys' fees arising out of or resulting from the performance of the work.

§ 13.9 EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

§ 13.9.1 The Contractor shall maintain policies of employment as follows:

§ 13.9.1.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layout or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

§ 13.9.1.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf; state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

§ 13.9.1.3 The Contractor shall be a signatory to the requirements of the Rhode Island Equal Employment Office.

§ 13.10 PREVAILING WAGES SCALES ON PUBLIC WORKS PROJECTS

§ 13.10.1. In accordance with Chapter 290 of the General laws of Rhode Island, 1938, as amended, the Department of Labor determined the customary and prevailing rate of wages paid to craftspersons, teamsters, and laborers in the constructing of public works by the State, and by cities and towns, and by persons contracting therewith for such construction. Violators are subject to a fine of not more than One Hundred Dollars (\$100.00) for each offense.

§ 13.10.2 The wage rates as ascertained by the Department of Labor are uniform for the State of Rhode Island and as of the date of advertisement of Contract applying to the life of this Contract. Information concerning wage rates prevailing in the construction industry in Rhode Island may be obtained from the Division of Professional Regulation, Department of Labor and Training, 1511 Pontiac Avenue, Cranston, Rhode Island, 02920 or their website www.dlt.state.ri.us.

Under no condition shall the wages paid to be less than those designated in the general classification. This clause does not relieve the Contractor or his Subcontractors from respecting any other union regulations to which he ordinarily subscribes.

§ 13.10.3 Bulletin No. 3, State Labor Laws, issued by the Rhode Island Department of Labor, pertaining to Public Works Projects (General Laws of Rhode Island, Revision of 1956, Chapter 37-12 as amended, and Chapter 77, Public Laws of 1965), is hereby made as part of this Project. These laws include, but are not limited to:

1. weekly payment of employees;
2. provisions applicable to public works contracts;
3. payment of prevailing wage rates;
4. posting of prevailing wage rates; and

int.

5. overtime compensation.

§ 13.11 MINORITY BUSINESS REQUIREMENTS

In accordance with RI Gen. Law § 37-14.1-1, it is the policy of the State of Rhode Island to support the fullest possible participation of firms owned and controlled by minorities (MBEs) and women (WBEs). Pursuant to §§ 37-14.1-2 and 37-14.1-6, MBEs and WBEs shall be included in all state purchasing, including, but not limited to, the procurement of goods, services, construction projects, or contracts funded in whole or in part with state funds, or funds which, in accordance with a federal grant or otherwise, the state expends or administers. MBEs and WBEs shall be awarded a minimum of ten percent (10%) of the dollar value of the entire procurement or project. MBE participation credit shall only be granted for firms duly certified as MBEs or WBEs by the State of Rhode Island, Department of Administration, Office of Diversity, Equity and Opportunity, MBE Compliance Office (MBECO). The current directory of firms certified as MBEs and WBEs may be accessed at <http://odeo.ri.gov/offices/mbeco/mbe-wbe.php> or by contacting Dorinda Keene at the MBECO at (401) 574-8670 or via email at

(Paragraph Deleted)

Dorinda.Keene@doa.ri.gov.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 Provided that the Contractor is not in breach of any of its obligations under the Contract, 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

(Paragraph Deleted)

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.

(Paragraph Deleted)

§ 14.1.2 Not Used

§ 14.1.3 If one of the above reasons exists, the Contractor may, upon seven days written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work properly executed and for all materials or equipment not incorporated in the Work, but delivered and suitably stored at the site. The payment for materials or equipment stored at the site shall be conditioned upon submission by the Contractor of bills of sale or such other evidence as is satisfactory to the Owner to establish the Owner's title to such material or equipment or otherwise protect the Owner's interest.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 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 disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
- .4 becomes the subject of a voluntary petition in bankruptcy or any voluntary proceeding related to insolvency, receivership, liquidation or comparable proceeding or any assignment for the benefit of creditors or becomes the subject of an involuntary petition in bankruptcy or any involuntary proceeding related to insolvency, receivership, liquidation or comparable proceeding or any assignment for the benefit of creditors;
- .5 submits three successive Applications for Payment, each of which indicate that the actual Work completed is less than 90 percent of the values estimated in the construction schedule (submitted by the Contractor pursuant to Section 3.10.1) to be completed by the respective dates; or

.6 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.

§ 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 all costs and losses incurred by the Owner on account of the Contractor's failure to comply with the Contract Documents and compensation for the Architect's and Owner's Project Manager'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 Owner shall be entitled to hold all amounts due the Contractor at the date of termination until all of the Owner's damages have been established, and to apply such amounts to such damages.

§ 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, subject to compliance with the conditions of Section 8.3. 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 the event that the Contract is terminated for the Owner's convenience, the Contractor shall be reimbursed in accordance with the Contract Documents for all Work properly performed up to the termination date, and for all materials or equipment not incorporated in the Work, but delivered and suitably stored at the site.

Payment for materials or equipment stored at the site shall be conditioned upon submission by the Contractor of bills of sale or such other evidence as is satisfactory to the Owner to establish the Owner's title to such material or equipment or otherwise protect the Owner's interest. The Contractor shall not be entitled to payment for overhead and profit on the Work not executed.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

The word "Claim" shall mean a written demand by the Contractor for an increase in the Contract Time or the Contract Sum. The Contractor is responsible for substantiating its Claims. The word "Claim" shall not include claims by the Owner. The Owner may withhold from the

(Paragraph Deleted)

Contractor the value of any claims against the Contractor in accordance with Massachusetts General Laws, including, but not limited to, Sections 39G and 39K of Chapter 30.

§ 15.1.2 Notice of Claims

Contractor must initiate Claims within fourteen (14) calendar days after occurrence of the event giving rise to such Claim by written notice to the Architect and the Owner. Such written notice must (1) be signed by the Contractor; (2) conspicuously identify on its face that the notice serves as a notice of claim; (3) explain in sufficient detail the basis of the Claim; (4) identify the date of the event giving rise to such Claim; and (5) state the exact dollar amount of the increase in the

Contract Sum being requested, if any, and the number of days extension to the Contract Time sought, if any.

§ 15.1.3 Not Used

§ 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 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 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

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User Notes:

(3B9ADA31)

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 73 46

PREVAILING WAGE RATES

The State of Rhode Island Department of Labor, Division of Professional Regulation General Decision Modification document, current as of the bid issuance date for this Project, is an integral part of the Bid Documents for use in fulfilling prevailing wage rate requirements. A copy is included below.

Additional information concerning prevailing wage rates may be obtained from the Rhode Island Division of Professional Regulation, Department of Labor and Training, 1511 Pontiac Avenue, Cranston, Rhode Island, 02920.

"General Decision Number: RI20240001 04/05/2024"

Superseded General Decision Number: RI20230001

State: Rhode Island

Construction Types: Building, Heavy (Heavy and Marine) and Highway

Counties: Rhode Island Statewide.

BUILDING CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories) HEAVY, HIGHWAY AND MARINE CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered	. Executive Order 14026	
into on or after January 30,	generally applies to the	
2022, or the contract is	contract.	
renewed or extended (e.g., an	. The contractor must pay	
option is exercised) on or	all covered workers at	
after January 30, 2022:	least \$17.20 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 2024.	

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.
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The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/05/2024
1	01/12/2024
2	02/23/2024
3	03/08/2024
4	03/22/2024
5	04/05/2024

ASBE0006-006 09/01/2023

	Rates	Fringes
HAZARDOUS MATERIAL HANDLER (Includes preparation, wetting, stripping, removal scrapping, vacuuming, bagging & disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems).....	\$ 48.15	34.84

ASBE0006-008 09/01/2023

	Rates	Fringes
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Asbestos Worker/Insulator Includes application of all insulating materials, protective coverings, coatings & finishes to all types of mechanical systems.	\$ 48.15	34.84

BOIL0029-001 01/01/2021		
	Rates	Fringes
BOILERMAKER.....	\$ 45.87	29.02

BRRI0003-001 06/01/2022		
	Rates	Fringes
Bricklayer, Stonemason, Pointer, Caulker & Cleaner.....	\$ 46.86	29.14

BRRI0003-002 09/01/2022		
	Rates	Fringes
Marble Setter, Terrazzo Worker & Tile Setter.....	\$ 46.54	30.34

BRRI0003-003 09/01/2022		
	Rates	Fringes
Marble, Tile & Terrazzo Finisher.....	\$ 38.78	29.61

CARP0330-001 01/01/2024		
	Rates	Fringes
CARPENTER (Includes Soft Floor Layer).....	\$ 43.63	30.25
Diver Tender.....	\$ 44.88	30.25
DIVER.....	\$ 57.03	30.25
Piledriver.....	\$ 41.53	29.35
WELDER.....	\$ 44.88	30.25

FOOTNOTES:

When not diving or tending the diver, the diver and diver tender shall receive the piledriver rate. Diver tenders shall receive \$1.00 per hour above the pile driver rate

when tending the diver.

Work on free-standing stacks, concrete silos & public utility electrical power houses, which are over 35 ft. in height when constructed: \$.50 per hour additional.

Work on exterior concrete shear wall gang forms, 45 ft. or more above ground elevation or on setback: \$.50 per hour additional.

The designated piledriver, known as the "monkey": \$1.00 per hour additional.

 CARP1121-002 01/02/2023

	Rates	Fringes
MILLWRIGHT.....	\$ 41.54	30.73

ELEC0099-002 06/01/2023

	Rates	Fringes
ELECTRICIAN.....	\$ 48.61	50.44%
Teledata System Installer.....	\$ 36.46	11.59%+15.31

FOOTNOTES:

Work of a hazardous nature, or where the work height is 30 ft. or more from the floor, except when working OSHA-approved lifts: 20% per hour additional.

Work in tunnels below ground level in combined sewer outfall: 20% per hour additional.

 ELEV0039-001 01/01/2023

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 59.36	37.335+a+b

FOOTNOTES:

a. PAID HOLIDAYS: New Years Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

b. Employer contributes 8% basic hourly rate for 5 years or

more of service of 6% basic hourly rate for 6 months to 5 years of service as vacation pay credit.

 ENGI0057-001 11/01/2023

	Rates	Fringes
Operating Engineer: (power plants, sewer treatment plants, pumping stations, tunnels, caissons, piers, docks, bridges, wind turbines, subterranean & other marine and heavy construction work)		
GROUP 1.....	\$ 41.95	29.75
GROUP 2.....	\$ 39.95	29.75
GROUP 3.....	\$ 35.23	29.75
GROUP 4.....	\$ 38.93	29.75
GROUP 5.....	\$ 38.93	29.75
GROUP 6.....	\$ 34.65	29.75
GROUP 7.....	\$ 28.65	29.75
GROUP 8.....	\$ 34.20	29.75
GROUP 9.....	\$ 43.17	29.45

a. BOOM LENGTHS, INCLUDING JIBS:

- 150 feet and over + \$ 2.00
- 180 feet and over + \$ 3.00
- 210 feet and over + \$ 4.00
- 240 feet and over + \$ 5.00
- 270 feet and over + \$ 7.00
- 300 feet and over + \$ 8.00
- 350 feet and over + \$ 9.00
- 400 feet and over + \$10.00

a. PAID HOLIDAYS:

New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, Christmas Day. a: Any employee who works 3 days in the week in which a holiday falls shall be paid for the holiday.

a. FOOTNOTES:

Hazmat work: \$2.00 per hour additional.
 Tunnel/Shaft work: \$5.00 per hour additional.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Cranes, lighters, boom trucks and derricks

GROUP 2: Digging machine, Ross Carrier, locomotive, hoist, elevator, bidwell-type machine, shot & water blasting machine, paver, spreader, graders, front end loader (3 yds. and over), vibratory hammer & vacuum truck, roadheaders, forklifts, economobile type equipment, tunnel boring machines, concrete pump and on site concrete plants.

GROUP 3: Oilers on cranes.

GROUP 4: Oiler on crawler backhoe.

GROUP 5: Bulldozer, bobcats, skid steer loader, tractor, scraper, combination loader backhoe, roller, front end loader (less than 3 yds.), street and mobile-powered sweeper (3-yd. capacity), 8-ft. sweeper minimum 65 HP).

GROUP 6: Well-point installation crew.

GROUP 7: Utility Engineers and Signal Persons

GROUP 8: Heater, concrete mixer, stone crusher, welding machine, generator and light plant, gas and electric driven pump and air compressor.

GROUP 9: Boat & tug operator.

 ENGI0057-002 11/01/2023

	Rates	Fringes
Power Equipment Operator (highway construction projects; water and sewerline projects which are incidental to highway construction projects; and bridge projects that do not span water)		
GROUP 1.....	\$ 41.95	29.75
GROUP 2.....	\$ 39.95	29.75
GROUP 3.....	\$ 35.23	29.75
GROUP 4.....	\$ 38.93	29.75
GROUP 5.....	\$ 38.93	29.75
GROUP 6.....	\$ 34.65	29.75
GROUP 7.....	\$ 28.65	29.75
GROUP 8.....	\$ 34.20	29.75
GROUP 9.....	\$ 34.28	29.75

a. FOOTNOTE: a. Any employee who works three days in the week in which a holiday falls shall be paid for the holiday.

a. PAID HOLIDAYS: New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day & Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Digging machine, crane, piledriver, lighter, locomotive, derrick, hoist, boom truck, John Henry's, directional drilling machine, cold planer, reclaimer, paver, spreader, grader, front end loader (3 yds. and over), vacuum truck, test boring machine operator, veemere saw, water blaster, hydro-demolition robot, forklift, economobile, Ross Carrier, concrete pump operator and boats

GROUP 2: Well point installation crew

GROUP 3: Utility engineers and signal persons

GROUP 4: Oiler on cranes

GROUP 5: Combination loader backhoe, front end loader (less than 3 yds.), forklift, bulldozers & scrapers and boats

GROUP 6: Roller, skid steer loaders, street sweeper

GROUP 7: Gas and electric drive heater, concrete mixer, light plant, welding machine, pump & compressor

GROUP 8: Stone crusher

GROUP 9: Mechanic & welder

 ENGI0057-003 12/01/2023

BUILDING CONSTRUCTION

	Rates	Fringes
Power Equipment Operator		
GROUP 1.....	\$ 46.07	29.75
GROUP 2.....	\$ 44.07	29.75
GROUP 3.....	\$ 42.60	29.75
GROUP 4.....	\$ 39.85	29.75
GROUP 5.....	\$ 37.00	29.75
GROUP 6.....	\$ 43.15	29.75
GROUP 7.....	\$ 42.72	29.75

GROUP 8.....\$ 40.04 29.75

a. BOOM LENGTHS, INCLUDING JIBS:

- 150 ft. and over: + \$ 2.00
- 180 ft. and over: + \$ 3.00
- 210 ft. and over: + \$ 4.00
- 240 ft. and over: + \$ 5.00
- 270 ft. and over: + \$ 7.00
- 300 ft. and over: + \$ 8.00
- 350 ft. and over: + \$ 9.00
- 400 ft. and over: + \$10.00

a. PAID HOLIDAYS: New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day & Christmas Day. a: Any employee who works 3 days in the week in which a holiday falls shall be paid for the holiday.

- a. FOOTNOTE: Hazmat work: \$2.00 per hour additional.
Tunnel/Shaft work: \$5.00 per hour additional.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Cranes, lighters, boom trucks and derricks.

GROUP 2: Digging machine, Ross carrier, locomotive, hoist, elevator, bidwell-type machine, shot & water blasting machine, paver, spreader, front end loader (3 yds. and over), vibratory hammer and vacuum truck

GROUP 3: Telehandler equipment, forklift, concrete pump & on-site concrete plant

GROUP 4: Fireman & oiler on cranes

GROUP 5: Oiler on crawler backhoe

GROUP 6: Bulldozer, skid steer loaders, bobcats, tractor, grader, scraper, combination loader backhoe, roller, front end loader (less than 3 yds.), street and mobile powered sweeper (3 yds. capacity), 8-ft. sweeper (minimum 65 hp)

GROUP 7: Well point installation crew

GROUP 8: Heater, concrete mixer, stone crusher, welding machine, generator for light plant, gas and electric driven pump & air compressor

IRON0037-001 09/16/2023

	Rates	Fringes
IRONWORKER.....	\$ 40.00	32.58

LABO0271-001 11/27/2022

BUILDING CONSTRUCTION

	Rates	Fringes
LABORER		
GROUP 1.....	\$ 35.50	26.85
GROUP 2.....	\$ 35.75	26.85
GROUP 3.....	\$ 36.25	26.85
GROUP 4.....	\$ 36.50	26.85
GROUP 5.....	\$ 37.50	26.85

LABORERS CLASSIFICATIONS

GROUP 1: Laborer, Carpenter Tender, Mason Tender, Cement Finisher Tender, Scaffold Erector, Wrecking Laborer, Asbestos Removal [Non-Mechanical Systems]

GROUP 2: Asphalt Raker, Adzemen, Pipe Trench Bracer, Demolition Burner, Chain Saw Operator, Fence & Guard Rail Erector, Setter of Metal Forms for Roadways, Mortar Mixer, Pipelayer, Riprap & Dry Stonewall Builder, Highway Stone Spreader, Pneumatic Tool Operator, Wagon Drill Operator, Tree Trimmer, Barco-Type Jumping Tamper, Mechanical Grinder Operator

GROUP 3: Pre-Cast Floor & Roof Plank Erectors

GROUP 4: Air Track Operator, Hydraulic & Similar Self-Powered Drill, Block Paver, Rammer, Curb Setter, Powderman & Blaster

GROUP 5: Toxic Waste Remover

LABORERS CLASSIFICATIONS

GROUP 1: Laborer, Carpenter Tender, Mason Tender, Cement Finisher Tender, Scaffold Erector, Wrecking Laborer, Asbestos Removal [Non-Mechanical Systems]

GROUP 2: Asphalt Raker, Adzemen, Pipe Trench Bracer, Demolition Burner, Chain Saw Operator, Fence & Guard Rail Erector, Setter of Metal Forms for Roadways, Mortar Mixer, Pipelayer, Riprap & Dry Stonewall Builder, Highway Stone Spreader, Pneumatic Tool Operator, Wagon Drill Operator, Tree Trimmer, Barco-Type Jumping Tamper, Mechanical Grinder

Operator

GROUP 3: Pre-Cast Floor & Roof Plank Erectors

GROUP 4: Air Track Operator, Hydraulic & Similar Self-Powered
 Drill, Block Paver, Rammer, Curb Setter, Powderman & Blaster

GROUP 5: Toxic Waste Remover

 LABO0271-002 11/27/2022

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
LABORER		
COMPRESSED AIR		
Group 1.....	\$ 55.40	24.15
Group 2.....	\$ 52.93	24.15
Group 3.....	\$ 42.45	24.15
FREE AIR		
Group 1.....	\$ 44.05	24.15
Free Air		
Group 1.....	\$ 46.00	24.15
FREE AIR		
Group 2.....	\$ 43.05	24.15
Free Air		
Group 2.....	\$ 45.00	24.15
FREE AIR		
Group 3.....	\$ 40.50	24.15
Free Air		
Group 3.....	\$ 42.45	24.15
LABORER		
Group 1.....	\$ 35.50	24.85
Group 2.....	\$ 35.75	24.85
Group 3.....	\$ 36.50	24.85
Group 4.....	\$ 29.00	24.85
Group 5.....	\$ 37.50	24.85
OPEN AIR CAISSON, UNDERPINNING WORK AND BORING CREW		
Bottom Man.....	\$ 41.50	24.15
Top Man & Laborer.....	\$ 35.60	24.15
TEST BORING		
Driller.....	\$ 41.95	24.15
Laborer.....	\$ 41.95	24.15
LABORER CLASSIFICATIONS		

GROUP 1: Laborer; Carpenter tender; Cement finisher tender;

Wrecking laborer; Asbestos removers [non-mechanical systems];
Plant laborer; Driller in quarries

GROUP 2: Adzeperson; Asphalt raker; Barcotype jumping tamper;
Chain saw operators; Concrete and power buggy operator;
Concrete saw operator; Demolition burner; Fence and guard rail
erector; Highway stone spreader; Laser beam operator;
Mechanical grinder operator; Mason tender; Mortar mixer;
Pneumatic tool operator; Riprap and dry stonewall builder;
Scaffold erector; Setter of metal forms for roadways; Wagon
drill operator; Wood chipper operator; Pipelayer; Pipe trench
bracer

GROUP 3: Air track drill operator; Hydraulic and similar
powered drills; Brick paver; Block paver; Rammer and curb
setter; Powderperson and blaster

GROUP 4: Flagger & signaler

GROUP 5: Toxic waste remover

LABORER - COMPRESSED AIR CLASSIFICATIONS

GROUP 1: Mucking machine operator, tunnel laborer, brake
person, track person, miner, grout person, lock tender, gauge
tender, miner: motor person & all others in compressed air

GROUP 2: Change house attendant, powder watchperson, top
person on iron

GROUP 3: Hazardous waste work within the ""HOT"" zone

LABORER - FREE AIR CLASSIFICATIONS

GROUP 1: Grout person - pumps, brake person, track person,
form mover & stripper (wood & steel), shaft laborer, laborer
topside, outside motorperson, miner, conveyor operator, miner
welder, heading motorperson, erecting operator, mucking
machine operator, nozzle person, rodperson, safety miner,
shaft & tunnel, steel & rodperson, mole nipper, concrete
worker, form erector (wood, steel and all accessories), cement
finisher (this type of work only), top signal person, bottom
person (when heading is 50' from shaft), burner, shield
operator and TBM operator

GROUP 2: Change house attendant, powder watchperson

GROUP 3: Hazardous waste work within the ""HOT"" zone

LABORER CLASSIFICATIONS

GROUP 1: Laborer; Carpenter tender; Cement finisher tender; Wrecking laborer; Asbestos removers [non-mechanical systems]; Plant laborer; Driller in quarries

GROUP 2: Adzeperson; Asphalt raker; Barcotype jumping tamper; Chain saw operators; Concrete and power buggy operator; Concrete saw operator; Demolition burner; Fence and guard rail erector; Highway stone spreader; Laser beam operator; Mechanical grinder operator; Mason tender; Mortar mixer; Pneumatic tool operator; Riprap and dry stonewall builder; Scaffold erector; Setter of metal forms for roadways; Wagon drill operator; Wood chipper operator; Pipelayer; Pipe trench bracer

GROUP 3: Air track drill operator; Hydraulic and similar powered drills; Brick paver; Block paver; Rammer and curb setter; Powderperson and blaster

GROUP 4: Flagger & signaler

GROUP 5: Toxic waste remover

LABORER - COMPRESSED AIR CLASSIFICATIONS

GROUP 1: Mucking machine operator, tunnel laborer, brake person, track person, miner, grout person, lock tender, gauge tender, miner: motor person & all others in compressed air

GROUP 2: Change house attendant, powder watchperson, top person on iron

GROUP 3: Hazardous waste work within the "HOT" zone

LABORER - FREE AIR CLASSIFICATIONS

GROUP 1: Grout person - pumps, brake person, track person, form mover & stripper (wood & steel), shaft laborer, laborer topside, outside motorperson, miner, conveyor operator, miner welder, heading motorperson, erecting operator, mucking machine operator, nozzle person, rodperson, safety miner, shaft & tunnel, steel & rodperson, mole nipper, concrete worker, form erector (wood, steel and all accessories), cement finisher (this type of work only), top signal person, bottom person (when heading is 50' from shaft), burner, shield operator and TBM operator

GROUP 2: Change house attendant, powder watchperson

GROUP 3: Hazardous waste work within the ""HOT"" zone

PAIN0011-005 06/01/2023

	Rates	Fringes
PAINTER		
Brush and Roller.....	\$ 37.62	22.85
Epoxy, Tanks, Towers, Swing Stage & Structural Steel.....	\$ 39.62	22.85
Spray, Sand & Water Blasting.....	\$ 40.62	22.85
Taper.....	\$ 38.37	22.85
Wall Coverer.....	\$ 38.12	22.85

PAIN0011-006 06/01/2022

	Rates	Fringes
GLAZIER.....	\$ 40.78	23.40

FOOTNOTES:

SWING STAGE: \$1.00 per hour additional.

PAID HOLIDAYS: Labor Day & Christmas Day.

PAIN0011-011 06/01/2023

	Rates	Fringes
Painter (Bridge Work).....	\$ 56.25	23.45

PAIN0035-008 06/01/2011

	Rates	Fringes
Sign Painter.....	\$ 24.79	13.72

PLAS0040-001 01/01/2024

BUILDING CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 43.00	29.10

FOOTNOTE: Cement Mason: Work on free swinging scaffolds under 3 planks width and which is 20 or more feet above ground and any offset structure: \$.30 per hour additional.

 PLAS0040-002 01/01/2024

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 38.45	25.30

 PLAS0040-003 01/01/2024

	Rates	Fringes
PLASTERER.....	\$ 43.65	29.43

 PLUM0051-002 08/28/2023

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 50.59	32.75

 ROOF0033-004 12/01/2023

	Rates	Fringes
ROOFER.....	\$ 43.80	30.31

 * SFRI0669-001 04/01/2024

	Rates	Fringes
SPRINKLER FITTER.....	\$ 49.98	32.85

 SHEE0017-002 12/01/2020

	Rates	Fringes
Sheet Metal Worker.....	\$ 38.58	36.73

 TEAM0251-001 05/01/2023

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
TRUCK DRIVER		

GROUP 1.....	\$ 29.71	34.602+A+B
GROUP 2.....	\$ 29.86	34.602+A+B
GROUP 3.....	\$ 29.91	34.602+A+B
GROUP 4.....	\$ 29.96	34.602+A+B
GROUP 5.....	\$ 30.06	34.602+A+B
GROUP 6.....	\$ 30.46	34.602+A+B
GROUP 7.....	\$ 30.66	34.602+A+B
GROUP 8.....	\$ 30.16	34.602+A+B
GROUP 9.....	\$ 30.41	34.602+A+B
GROUP 10.....	\$ 30.21	34.602+A+B

FOOTNOTES:

A. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, plus Presidents' Day, Columbus Day, Veteran's Day & V-J Day, providing the employee has worked at least one day in the calendar week in which the holiday falls.

B. Employee who has been on the payroll for 1 year or more but less than 5 years and has worked 150 Days during the last year of employment shall receive 1 week's paid vacation; 5 to 10 years - 2 weeks' paid vacation; 10 or more years - 3 week's paid vacation.

C. Employees on the seniority list shall be paid a one hundred dollar (\$100.00) bonus for every four hundred (400) hours worked, up to a maximum of five hundred dollars (\$500.00)

All drivers working on a defined hazard material job site shall be paid a premium of \$2.00 per hour over applicable rate.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Pick-up trucks, station wagons, & panel trucks

GROUP 2: Two-axle on low beds

GROUP 3: Two-axle dump truck

GROUP 4: Three-axle dump truck

GROUP 5: Four- and five-axle equipment

GROUP 6: Low-bed or boom trailer.

GROUP 7: Trailers when used on a double hook up (pulling 2 trailers)

GROUP 8: Special earth-moving equipment, under 35 tons

GROUP 9: Special earth-moving equipment, 35 tons or over

GROUP 10: Tractor trailer

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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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 <https://www.dol.gov/agencies/whd/government-contracts>.

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) (iii)).

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 National Office because National Office has responsibility for the 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.

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END OF GENERAL DECISION"

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SECTION 01 10 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Contract description.
- B. Owner Supplied Products
- C. Contractor's use of site and premises.
- D. Owner occupancy.
- E. Hazardous Material Suspicion
- F. Definitions
- H. Covid-19 Safety and Health Protocol

1.02 CONTRACT DESCRIPTION

- A. Work of the Project includes Restroom and window renovations at the existing building listed below as described on the drawings and in this project manual.

John Greene School
51 Draper Avenue, Warwick, RI 02889
- B. The work of the project also includes the removal in select areas of existing asbestos-containing material.
NOTE: The asbestos testing and abatement documents will be included in a forthcoming Addendum.
- C. Perform the Work of the Contract under a stipulated sum Contract with the Owner in accordance with the Conditions of Contract.
- D. The Work of the Contract is identified in the Project Manual and on the Drawings.

1.03 OWNER SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner-reviewed Shop Drawings, Product Data, and Samples, to the Contractor.
 - 2. Arrange and pay for delivery to the site.
 - 3. On delivery, inspect products jointly with the 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 the site; inspect for completeness or damage jointly with the Owner.
 - 3. Handle, store, install and finish products.
 - 4. Repair or replace items damaged after receipt.

- C. Items furnished by the Owner for installation by the Contractor:
(See drawings and specifications for quantities and locations)
 - 1. The Owner will supply the surface mounted paper towel dispensers, soap dispensers, and toilet tissue dispensers from their Vendor. Coordinate with the Owner for receipt of these items. Contractor is to install them in locations shown on the drawings and as listed in this section's schedule. All installations are to meet state accessibility code location and height requirements. Contractor is to provide all blocking as required in stud walls. Note that some of these Owner-supplied accessories may be reused existing accessories relocated to new locations. See drawings for additional information and coordinate with Owner.

1.04 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Construction Personnel Conduct
 - 1. The following conduct by construction personnel will not be tolerated on the Owner's property, violators may be ejected from the site.
 - a. NO SMOKING is allowed. The Contractor will erect signs noting such at all entrances.
 - b. No drugs or alcohol are allowed
 - c. No firearms or weapons are allowed.
 - d. No foul language will be tolerated.
 - e. No fighting. All involved will be subject to being removed from the site.

1.05 OWNER OCCUPANCY

- A. The Owner will occupy the site and premises during the entire period of construction.
- B. Cooperate with the Owner to minimize any possible conflicts if necessary.

1.06 HAZARDOUS MATERIAL SUSPICION

- A. If, during the course of construction, the Contractor suspects a material to contain asbestos, all work involving the material is to be stopped and the Architect notified immediately of the suspicion. Until the material is confirmed to be safe or tested and determined to be an asbestos containing material, the Contractor is to assume it contains asbestos and is to avoid contact. Upon notification of its composition the Architect will determine the course of action and inform the Contractor accordingly.

1.07 DEFINITIONS

- A. Basic Contract definitions are included below.
1. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
 2. "Directed": A command or instruction by Architect. . Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
 3. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
 4. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
 5. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
 6. "Install": Operations at Project site including unloading, temporarily storing, unpacking, disposing of packaging, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
 7. "Provide": Furnish and install, complete, in place, and ready for the intended use.
 8. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

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SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Schedule of values.
- B. Applications for payment.
- C. Sales Tax Exemption
- D. Change procedures.
- E. Defect assessment.
- F. Unit prices.

1.02 SCHEDULE OF VALUES

- A. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet
- B. Submit Schedule of Values in duplicate, one copyrighted original and one copy, within fifteen (15) days after date of receipt of a Notice to Proceed.
- C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify site mobilization, bonds and insurance.
- D. Include in each line item, the amount of Allowances specified in Section 01 21 00 if occurring. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- E. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list approved Change Orders, with each Application for Payment.

1.03 APPLICATIONS FOR PAYMENT

- A. Submit each application on an original copyrighted AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet, accompanied by three copies.
 - 1. Individually sign and notarize, and emboss with notary's official seal, the original and each of the three copies.
 - 2. Applications not including original copyrighted AIA G702, and G703 Forms, will be rejected, and returned for resubmittal.
 - 3. Applications not properly signed and notarized will be rejected, and returned for resubmittal.

- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Provide one copy of the updated construction schedule with each Application for Payment submission.
 - 1. Provide a statement signed by the Contractor's firm principal certifying that there are no unidentified outstanding claims for delay.
- D. Include with each monthly Application for Payment, following the first application, one copy of the Certified Monthly Payroll Record for the previous month's pay period.
- E. Payment Period: Submit at intervals stipulated in the Agreement.
- F. Submit with transmittal letter as specified for Submittals in Section 01 33 00.
- G. Beginning with the second Application for Payment, Contractor's right to payment must be substantiated by documenting, on a copy of the Waiver of Lien Form included in Document 00 65 19.16 - Waiver of Lien Form in this Project Manual, that payment monies due, less retainage not exceeding ten percent, have been paid in full to subcontractor and suppliers for work, materials, or rental of equipment billed for under specific line item numbers in the immediately preceding application.
- H. Substantiating Data: When the Architect requires substantiating information, submit data justifying dollar amounts in question. Include the following with the Application for Payment :
 - 1. Record Documents as specified in Section 01 78 00, for review by the Owner which will be returned to the Contractor.
 - 2. Affidavits attesting to off-site stored products.
 - 3. Construction progress schedules, revised and current as specified in Section 01 33 00.

1.04 SALES TAX EXEMPTION

- A. Owner is exempt from sales tax on products permanently incorporated in Work of the Project.

1.05 CHANGE PROCEDURES

- A. Submittals: Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time by issuing supplemental instructions on AIA Form G710
- C. The Architect may issue a Proposal Request which 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 will prepare and submit an estimate within fifteen (15) days.
- D. The Contractor may propose changes by submitting a request for change to the Architect, describing the proposed change and its full effect on the Work. Include 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 60 00.

- E. Stipulated Sum Change Order: Based on Proposal Request, and Contractor's fixed price quotation, or Contractor's request for a Change Order as approved by Architect.
- F. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work that are not pre-determined, execute the Work under a Construction Change Directive. Changes in the Contract Sum or Contract Time will be computed as specified for a Time and Material Change Order.
- G. Construction Change Directive: Architect may issue a directive, on AIA Form G713 Construction Change Directive signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in the Contract Sum or Contract Time. Promptly execute the change.
- H. Time and Material Change Order: Submit an itemized account and supporting data after completion of the change, within the time limits indicated in the Conditions of the Contract. The Architect will determine the change allowable in the Contract Sum and Contract Time as provided in the Contract Documents.
- I. Maintain detailed records of work done on a Time and Material basis. Provide full information required for an evaluation of the proposed changes, and to substantiate costs for the changes in the Work.
- J. Document each quotation for a change in cost or time with sufficient data to allow an evaluation of the quotation. Provide detailed breakdown of costs and estimates for labor and materials including a detailed breakdown for subcontractor's or vendor's Work. Include copies of written quotations from subcontractors or vendors.
- K. Change Order Forms: AIA G701 Change Order.
- L. Execution of Change Orders: The Architect will issue Change Orders for signatures of the parties as provided in the Conditions of the Contract.
- M. Correlation Of Contractor Submittals:
 - 1. Promptly revise the Schedule of Values and the Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
 - 2. Promptly revise progress schedules to reflect any change in the Contract Time, revise sub-schedules to adjust times for any other items of work affected by the change, and resubmit.
 - 3. Promptly enter changes in the Project Record Documents.

1.06 DEFECT ASSESSMENT

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

- C. The defective Work may remain, but the unit sum will be adjusted to a new sum at the discretion of the Architect.
- D. The defective Work will be partially repaired to the instructions of the Architect, and the unit sum will be adjusted to a new sum at the discretion of the Architect.
- E. The individual Specification Sections may modify these options or may identify a specific formula or percentage sum reduction.
- F. The authority of the Architect to assess the defect and identify a payment adjustment is final.
- G. Non-Payment for Rejected Products: Payment will not be made for rejected products 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.

1.07 UNIT PRICES

- A. Authority: Measurement methods are delineated in the individual specification Sections.
- B. Measurement methods delineated in the individual specification Sections complement the criteria of this section. In case of conflict, the requirements of the individual specification Section govern.
- C. Take measurements and compute quantities. The Architect will verify measurements and quantities.
- D. Unit Quantities: The quantities and measurements indicated in the Bid Form are for contract purposes only. The quantities and measurements supplied or placed in the Work shall determine payment.
 - 1. When the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum contracted.
 - 2. When the actual Work requires a 25 percent or greater change in quantity than those quantities indicated, the Owner or Contractor may claim for a Contract Price adjustment.
- E. Unit Price amount includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.
- F. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Architect multiplied by the unit sum for Work which is incorporated in or made necessary by the Work.
- G. Measurement of Quantities:
 - 1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.
 - 2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.

3. Metering Devices: Inspected, tested and certified by the applicable State department within the past year.
4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
5. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
6. Measurement by Area: Measured by square dimension using mean length and width or radius.
7. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
8. Stipulated Sum Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

H. See Bid Form for schedule of Unit Prices.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

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SECTION 01 21 00

ALLOWANCES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Cash allowances.

1.02 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, labor for installation and finishing, less applicable trade discounts; delivery to site, and applicable taxes
- B. Costs Not Included in Cash Allowances But Included in the Contract Sum: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage.
- C. Architect Responsibilities:
 - 1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.
 - 3. Prepare Change Order.
- D. Contractor Responsibilities:
 - 1. Assist Architect in selection of products, suppliers and installers.
 - 2. Obtain proposals from suppliers and installers and offer recommendations.
 - 3. On notification of selection by Architect, execute purchase agreement with designated supplier and installer.
 - 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 - 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- E. Differences in costs will be adjusted by Change Order.
- F. Allowances Schedule:
 - 1. **Allowance No. 1: Signage:**
Include the sum of **One thousand dollars (\$ 1,000.00)** for all work associated with the purchase and installation of signage.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

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SECTION 01 31 00

ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Preinstallation meetings.

1.02 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate the scheduling, submittals, and the Work of the various Sections of the Project Manual to ensure an efficient and orderly sequence of the installation of interdependent construction elements with provisions for accommodating the items installed later.
- B. Verify that the utility requirements and characteristics of the operating equipment are compatible with the building utilities. Coordinate the Work of the various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. In finished areas except as otherwise indicated, conceal the pipes, ducts, and wiring within the construction. Coordinate the locations of fixtures and outlets with the finish elements.
- D. Coordinate the completion and clean up of the Work of the separate Sections in preparation for Substantial Completion.
- E. After the Owner's occupancy of the premises, coordinate access to the site for correction of the defective Work and the Work not in accordance with the Contract Documents, to minimize disruption of the Owner's activities.

1.03 PRECONSTRUCTION MEETING

- A. The Architect will schedule a meeting after a Notice to Proceed is issued to the Contractor.
- B. Attendance Required: Owner, Architect, and Contractor.
- C. Agenda:
 - 1. Execution of the Owner-Contractor Agreement.
 - 2. Submission of the executed bonds and insurance certificates.
 - 3. Distribution of the Contract Documents.
 - 4. Submission of a list of Subcontractors, a list of products, schedule of values, and a progress schedule.
 - 5. Designation of the personnel representing the parties in the Contract, and the Architect.

6. The procedures and processing of the field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout procedures.
 7. Scheduling.
- D. Record the minutes and distribute copies within two days after the meeting to the participants, with two copies to the Architect, the Owner, the participants, and those affected by the decisions made.

1.04 SITE MOBILIZATION MEETING

- A. The Architect will schedule a meeting at the Project site prior to the Contractor's occupancy.
- B. Attendance Required: The Owner, Architect, Special Consultants, and, Contractor, the Contractor's Superintendent, and major Subcontractors.
- C. Agenda:
1. Use of the premises by the Owner and the Contractor.
 2. The Owner's requirements and occupancy.
 3. Construction facilities and controls provided by the Owner.
 4. Temporary utilities provided by the Owner.
 5. Survey and building layout.
 6. Security and housekeeping procedures.
 7. Schedules.
 8. Application for payment procedures.
 9. Procedures for testing.
 10. Procedures for maintaining the record documents.
 11. Requirements for start-up of the equipment.
 12. Inspection and acceptance of the equipment put into service during the construction period.
- D. Record the minutes and distribute the copies within two days after the meeting to the participants, with two copies to the Architect, Owner, participants, and those affected by the decisions made.

1.05 PROGRESS MEETINGS

- A. Schedule and administer the meetings throughout the progress of the Work at maximum bi-weekly (14 day) intervals.
- B. Make arrangements for the meetings, prepare the agenda with copies for the participants, and preside at the meetings.
- C. Attendance Required: The job superintendent, major subcontractors and suppliers, the Owner, Architect, as appropriate to agenda topics for each meeting.
- D. Agenda:
1. Review the minutes of previous meetings.
 2. Review of the Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of the problems which impede the planned progress.
 5. Review of the submittals schedule and status of the submittals.
 6. Review of the off-site fabrication and delivery schedules.
 7. Maintenance of the progress schedule.
 8. Corrective measures to regain the projected schedules.

9. Planned progress during the succeeding work period.
10. Coordination of the projected progress.
11. Maintenance of the quality and work standards.
12. Effect of the proposed changes on the progress schedule and coordination.
13. Other business relating to the Work.

- E. Record the minutes and distribute the copies within two days after the meeting to the participants, with two copies to the Architect, Owner, participants, and those affected by the decisions made.

1.06 PREINSTALLATION MEETING

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

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Method for Submission of Shop Drawings and Product Data
- E. Product data.
- F. Shop drawings.
- G. Samples.
- H. Design data.
- I. Test reports.
- J. Certificates.
- K. Manufacturer's instructions.
- L. Manufacturer's field reports.
- M. Erection drawings.

1.02 SUBMITTAL PROCEDURES

- A. Master List Submittal:
 - 1. Submit a master list of the required submittals with a proposed date for each item to be submitted.
 - 2. Show the date submittal was sent, days since submittal was sent, status of submittal, date submittal was received in return, and any date associated with resubmittals.
 - 3. Up date master list with each submission and response.
 - 4. Issue copy of master list at least monthly to the Architect.
- B. Transmit each submittal with a transmittal form.
- C. Sequentially number the transmittal form. Mark revised submittals with the original number and a sequential alphabetic suffix.

- D. Identify the Project, Contractor, subcontractor and supplier; the pertinent drawing and detail number, and the specification Section number, appropriate to the submittal.
- E. Apply a Contractor's stamp, signed or initialed, certifying that the review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of the information is in accordance with the requirements of the Work and the Contract Documents. The Contractor is to mark-up the submittal as required to indicate the exact materials the submittal addresses including at a minimum, sizes, locations, uses, colors, etc.
- F. Schedule submittals to expedite the Project, and deliver to the Architect at their business address. Coordinate the submission of related items. Upon completion of the submittal's review, the Architect's office will notify the Contractor. The Contractor is then responsible to pick-up the submittals in a timely manner.
- G. For each submittal for review, allow fifteen (15) days excluding the delivery time to and from the Contractor.
- H. Identify the variations from the Contract Documents and the Product or system limitations that may be detrimental to a successful performance of the completed Work.
- I. Allow space on the submittals for the Contractor's and the Architect's review stamps.
- J. When revised for resubmission, identify the changes made since the previous submission.
- K. Distribute copies of the reviewed submittals as appropriate. Instruct the parties to promptly report an inability to comply with the Contract requirements.
- L. Submittals not requested will not be recognized or processed.
- M. The Contractor will compensate the Architect and all consulting Engineers for services performed reviewing submittals beyond the original review and two follow-up reviews of the same product, material, sample or assembly. The compensation will be made through a credit change order that will reduce the total contract amount.

1.03 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit preliminary outline Schedules within fifteen (15) days after the date of receipt of a Notice to Proceed for coordination with the Owner's requirements. After a review, submit detailed schedules within fifteen (15) days modified to accommodate the revisions recommended by the Architect.
- B. Submit revised Progress Schedules with each Application for Payment.
- C. Distribute copies of the reviewed schedules to the Project site file, subcontractors, suppliers, and other concerned parties.
- D. Instruct the recipients to promptly report, in writing, the problems anticipated by the projections indicated in the schedules.
- E. Submit a computer generated horizontal bar chart with a separate line for each major portion of the Work or operation, or section of the Work, identifying the first workday of each week.

- F. Show a complete sequence of construction by activity, identifying the Work of separate stages and other logically grouped activities. Indicate the early and late start, the early and late finish, float dates, and the duration.
- G. Indicate an estimated percentage of completion for each item of the Work at each submission.
- H. Provide a separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished Products and Products identified under Allowances, if any, and the dates reviewed submittals will be required from the Architect. Indicate the decision dates for selection of the finishes.
- I. Indicate the delivery dates for Owner furnished Products, and for Products identified under Allowances.
- J. Revisions to Schedules:
 - 1. Indicate the progress of each activity to the date of submittal, and the projected completion date of each activity.
 - 2. Identify the activities modified since the previous submittal, major changes in the scope, and other identifiable changes.
 - 3. Provide a narrative report to define the problem areas, the anticipated delays, and impact on the Schedule. Report the corrective action taken, or proposed, and its effect including the effect of changes on the schedules of separate contractors.

1.04 PROPOSED PRODUCTS LIST

- A. Within fifteen (15) days after the date of receipt of a Notice to Proceed, submit a list of major products proposed for use, with the name of the manufacturer, the trade name, and the model number of each product.
- B. For the products specified only by reference standards, give the manufacturer, trade name, model or catalog designation, and reference standards.
- C. With each product listed, indicate the submittal requirements specified to be adhered to, and an indication of relevant "long-lead-time" information, when appropriate.

1.05 METHOD FOR SUBMISSION OF SHOP DRAWING AND PRODUCT DATA

- A. Method of electronic or hard copy delivery of shop drawing and data submittals is to be discussed with Architect at Preconstruction meeting.
Use one of the three methods listed below:
 - 1. Use an internet-based system agreed upon by the Architect and Contractor.
Comply with required transmittal and data formats using numbering system approved by Architect.
Assemble submittal package into a single indexed file incorporating submittal and cover sheet explaining project name, number, Architect, Contractor and submittal number.
 - 2. Email an electronic format (PDF) copy to the Architect.
Comply with required transmittal and data formats using numbering system approved by Architect.

- Assemble submittal package into a single indexed file incorporating submittal and cover sheet explaining project name, number, Architect, Contractor and submittal number.
3. Hard copies delivered to the Architect are to be submitted with the number of copies that the Contractor requires, plus three copies the Architect will retain.
- B. All shop drawings 24" x 36" or larger are to be delivered to the Architect in hard copy format as noted in Method 3 above.
 - C. All submittals are to include a Contractor's review stamp confirming approval prior to submission to the Architect.
 - D. The Architect will return the reviewed submittal to the Contractor for distribution to subcontractors, suppliers, fabricators, and others as necessary for proper performance of the Work.
 - E. Submit color samples on actual product material for final color selection by sending them via postal or delivery service directly to the Architect's office.

1.06 PRODUCT DATA

- A. Product Data: Submit to the Architect for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Provide copies and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01 78 00.
- B. Mark each copy to identify the applicable products, models, options, and other data. Supplement the manufacturers' standard data to provide the information specific to this Project.
- C. Indicate the product utility and electrical characteristics, the utility connection requirements, and the location of utility outlets for service for functional equipment and appliances.
- D. After receiving approved submittals, distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01 78 00.

1.07 SHOP DRAWINGS

- A. Shop Drawings: Submit to the Architect for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01 78 00.
- B. Indicate the special utility and electrical characteristics, the utility connection requirements, and the location of utility outlets for service for functional equipment and appliances.
- C. Submit the number of copies that the Contractor requires, plus three copies the Architect will retain.

1.08 SAMPLES

- A. Samples: Submit to the Architect for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Produce

duplicates and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01 78 00.

- B. Samples For Selection as Specified in Product Sections:
 - 1. Submit to the Architect for aesthetic, color, or finish selection.
 - 2. Submit samples of the finishes, indicating colors, texture, and patterns for the Architect's selection.
 - 3. After review, produce duplicates and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01 78 00.
- C. Submit samples to illustrate the functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate the sample submittals for interfacing Work.
- D. Include identification on each sample, with the full Project information.
- E. Submit the number of samples specified in the individual specification Sections; the Architect will retain one sample.
- F. Reviewed samples, which may be used in the Work, are indicated in the individual specification Sections.
- G. Samples will not be used for testing purposes unless they are specifically stated to be in the specification Section.

1.09 DESIGN DATA

- A. Submit for the Architect's knowledge as contract administrator.
- B. Submit for information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.10 TEST REPORTS

- A. Submit for the Architect's knowledge as contract administrator.
- B. Submit test reports for information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.11 CERTIFICATES

- A. When specified in the individual specification Sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to the Architect, in the quantities specified for the Product Data.
- B. Indicate that the material or product conforms to or exceeds the specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on the material or product, but must be acceptable to the Architect.

1.12 MANUFACTURER'S INSTRUCTIONS

- A. When specified in the individual specification Sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to the Architect for delivery to the Owner in the quantities specified for Product Data.
- B. Indicate the special procedures, and the perimeter conditions requiring special attention, and the special environmental criteria required for application or installation.

1.13 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for the Architect's benefit as contract administrator.
- B. Submit the report in duplicate within thirty (30) days of observation to the Architect for information.
- C. Submit for information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.14 ERECTION DRAWINGS

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

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 42 13

ABBREVIATIONS, ACRONYMS & DEFINITIONS

ABBREVIATIONS & ACRONYMS

The following is a list of abbreviations and acronyms and their meanings as used throughout this Specification.

ACM	Asbestos-Containing Material
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
CFM	Cubic Feet Per Minute
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CPR	Cardiopulmonary Resuscitation
DEP	Department of Environmental Protection
DOP	Diocetylphthalate
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
f/cc	Fibers Per Cubic Centimeter
GFCI	Ground Fault Circuit Interrupter
HEPA	High Efficiency Particulate Air
HUD	Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
IH	Industrial Hygienist
NECA	National Electric Contractors Association
NEMA	National Electric Manufacturers Association
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PAPR	Powered Air Purifying Respirator
PAT	Proficiency Analytical Testing Program
PEL	Permissible Exposure Limit
PSI	Pounds Per Square Inch
RI	Rhode Island
RIDOH	Rhode Island Department of Health
TWA	Time Weighted Average
UL	Underwriters Laboratories
US	United States
VAT	Vinyl Asbestos Floor Tile

DEFINITIONS

Aggressive Sampling	Air sampling which takes place after final clean-up while the air is being physically agitated.
Airborne Asbestos Analysis	Determination of the amount of asbestos fibers suspended in a given amount of air.
Air Lock	A system of enclosures consisting of two polyethylene-curtained doorways at least three feet apart that does not permit air movement between clean and contaminated areas.
Air Monitoring	The process of measuring the airborne fiber concentration of a specific quantity of air over a given amount of time.
Air Plenum	Any space used to convey air in a building or structure. The space above a suspended ceiling is often used as an air plenum.
Ambient Air	The surrounding air or atmosphere in a given area under normal conditions.
Amended Water	Water to which a chemical wetting agent (surfactant) has been added to improve penetration into asbestos-containing materials that are being removed.
Approved Landfill	A site for the disposal of asbestos-containing and other hazardous wastes that has been given EPA approval.
Asbestos	A generic name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are incombustible in air, and are separable into fibers. Asbestos includes the asbestiform varieties of chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite-grunerite); anthophyllite; and actinolite.
Asbestos Abatement	Procedures to control fiber release from asbestos-containing materials in buildings.
Asbestos Fibers	Fibers greater than five microns in length and with a length to width ratio of 3:1, generated from an asbestos-containing material.
CFM	Cubic feet per minute.
Clean Area	The first stage of the decontamination enclosure system in which workers prepare to enter the work area.
Decontamination Unit	A series of connected rooms with polyethylene doorways for the purpose of preventing contamination of areas adjacent to the work area.
Dirty Room or Area	Any area in which the concentration of airborne asbestos fibers exceeds 0.01 f/cc, or where there is visible asbestos residue.

Encapsulant (sealant)	A substance applied to asbestos-containing material which controls the release of airborne asbestos-fibers.
EPA	Environmental Protection Agency.
Equipment Room	The last stage or room of the worker decontamination system before entering the work area.
Facepiece	The portion of a respirator which covers the wearer's nose, mouth, and eyes in a full facepiece.
f/cc	Fibers per cubic centimeters of air.
Fiber Control	Minimizing the amount of airborne fiber generation through the application of amended water onto asbestos-containing material, or enclosure (isolation) of the material.
Fireproofing	Spray- or trowel-applied fire resistant materials.
Friable Asbestos	Any materials that contain more than 1% asbestos by weight and can be crumbled, pulverized, or reduced to powder by hand pressure.
Full-Facepiece Respirator	A respirator which covers the wearer's entire face from the hairline to below the chin.
Glovebag	Plastic bag-type enclosure placed around asbestos-containing pipe lagging so that it may be removed without generating airborne fibers into the atmosphere.
Ground Fault Circuit Interrupter	A circuit breaker that is sensitive to very low levels of current leakage from a fault in an electrical system.
HEPA	High Efficiency Particulate Air (Air Filter).
HVAC System	Heating, Ventilation, and Air Conditioning System, usually found in large business and industry facilities.
Logbook	An official record of all activities which occurred during a removal project.
Make-up Air	Supplied or recirculated air to offset that which has already been exhausted from an area.
Medical Examinations	An evaluation of a person's health status performed by a medical doctor.
Method 7400	NIOSH sampling and analytical method for fibers which uses Phase-contrast microscopy. Replaces Method P&CAM 239.
Micron	One millionth of a meter.
Millimeter	One thousandth of a meter.

MSDS	Material Safety Data Sheet.
Negative Pressure	An atmosphere created in a work area enclosure such that airborne fibers will tend to be drawn through the filtration system rather than leak out into the surrounding areas. The air pressure inside the work area is less than that outside the work area.
NESHAP	National Emission Standards for Hazardous Air Pollutants – EPA Regulation 40 CFR Subpart M, Part 61.
NIOSH	National Institute for Occupational Safety and Health, established by the Occupational Safety and Health Act of 1970.
NIOSH/MSHA	The official approving agencies for respiratory protective equipment who test and certify respirators.
OSHA	The Occupational Safety and Health Administration, created by the Occupational Safety and Health Act of 1970; serves as the enforcement agency for safety and health in workplace environments.
Personal Sample	An air sample taken with the sampling pump directly attached to the worker with the collecting filter placed in the worker's breathing zone.
Phase Contrast Microscopy (PCM)	An optical microscopic technique used for the counting of fibers in air samples, but which does not distinguish fiber types.
Polyethylene	Six-mil fire retardant plastic sheeting which is often used to seal off an area in which asbestos removal is taking place to prevent contamination of other areas.
Powered Air Purifying Respirator (PAPR)	Either a full facepiece, helmet, or hooded respirator that has the breathing air powered to the wearer after it has been purified through a filter.
Qualitative Fit Test	A method of testing a respirator's face-to-facepiece seal by covering the inhalation or exhalation valves and breathing either in or out to determine the presence of any leaks.
Recordkeeping	Detailed documentation of all program activities, decisions, analyses, and any other information pertinent to a project.
Shower Room	A room between the clean room and the equipment room in a worker decontamination system in which workers take showers when leaving the work area.
Substrate	The material or existing surface located under or behind the asbestos-containing material.

Supplied Air Respirator	A respirator that has a central source of breathing which is supplied to the wearer by way of an airline.
Surfactant	A chemical wetting agent added to water to improve its penetration abilities into asbestos-containing materials.
TWA	Time-Weighted Average, as in air sampling.
Visual Inspection	A walk-through type inspection of the work area to detect incomplete work, damage, or inadequate clean-up of a work site.
Water Damage	Deterioration or delamination of ceiling or wall materials due to leaks from plumbing or cracks in the roof.
Wetting Agents	Materials that are added to water which is used for wetting asbestos-containing material in order for the water to penetrate more effectively.
Workers' Compensation	A system of insurance required in some states by law, financed by employers, which provides payments to employees or their families for occupational injuries, illnesses, or fatalities resulting in loss of wage or income incurred while at work.

END OF SECTION

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SECTION 01 43 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Verification of Credentials and Licenses.
- C. Safety Awareness Policy
- D. Tolerances
- E. References.
- F. Mock-up requirements.
- G. Manufacturers' field services.

1.02 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor a quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of the specified quality.
- B. Comply with the manufacturers' instructions, including each step in sequence.
- C. When the manufacturers' instructions conflict with the Contract Documents, request a clarification from the Architect before proceeding.
- D. Comply with the specified standards as a minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform the Work by persons qualified to produce the required and specified quality.
- F. Verify that field measurements are as indicated on the Shop Drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- H. Field measurements
 - 1. Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication scheduled with construction progress to avoid construction delays.

- I. The Contractor, by approving and submitting Shop Drawings, Product Data, Samples, and similar submittals thereby represent that they have determined and verified all dimensions, quantities, field dimensions, relations to existing work, coordination with work to be installed later, coordination with information on previously accepted Shop Drawings, Product Data, Samples, or similar submittals and verification of compliance with all the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the Contractor. In reviewing Shop Drawings, Product Data, Samples, and similar submittals the Architect shall be entitled to rely upon the Contractor's representation that such information is correct and accurate.

1.03 VERIFICATION OF CREDENTIALS AND LICENSES

- A. All persons employed on the project site must have appropriate and current credentials and licenses in their possession, at the project site, for the work they are performing.
- B. Be forewarned that inspectors will be checking for verification of credentials and licenses of both union and non-union persons, in their onsite inspections.
- C. Inspectors will also be reviewing Contractor's Certified Monthly Payroll Records for conformance with RI State Prevailing Wage Rate requirements.
- D. Those persons without the appropriate credentials and licenses will be subject to dismissal from the project site.

1.04 SAFETY AWARENESS POLICY

- A. In accordance with Rhode Island General Laws, Title 28, S28-20-35 5.1 Safety awareness program required. (Effective January 1, 2002.) all contractors who bid on municipal and state construction projects with a total project cost of One Hundred Thousand Dollars(\$100,000.00) or more, shall have an OSHA “ten hour safety construction program” for their on-site employees. The training shall utilize instructors trained by the Occupational Safety Health Administration, using OSHA approved curriculum. Graduates shall receive a card from the U. S. Department of Labor Occupational Safety and Health Administration certifying the successful completion of the training course. The director of the Rhode Island Department of Labor and Training shall promulgate rules, regulations and penalties to enforce provisions of this section.
- B. The Contractor is required to conform to all applicable OSHA requirements on this project.

1.05 TOLERANCES

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

1.06 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by the date of issue current on the date of the Contract Documents, except where a specific date is established by code.
- C. Obtain copies of the standards where required by the product specification Sections.
- D. When the specified reference standards conflict with the Contract Documents, request a clarification from the Architect before proceeding.
- E. Neither the contractual relationships, duties, nor responsibilities of the parties in the Contract, nor those of the Architect, shall be altered from the Contract Documents by mention or inference otherwise in reference documents.

1.07 MOCK-UP REQUIREMENTS

- A. Tests will be performed under the provisions identified in this Section and identified in the respective product specification Sections.
- B. Assemble and erect the specified items with the specified attachment and anchorage devices, flashing, seals, and finishes.
- C. Accepted mock-ups shall be a comparison standard for the remaining Work.
- D. Where the mock-up has been accepted by the Architect and is specified in the product specification Sections to be removed, remove the mock-up and clear the area when directed to do so by the Architect.

1.08 MANUFACTURERS' FIELD SERVICES

- A. When specified in the individual specification Sections, require the material or Product suppliers, or manufacturers, to provide qualified staff personnel to observe the site conditions, the conditions of the surfaces and installation, the quality of workmanship, the start-up of equipment, or test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Submit the qualifications of the observer to the Architect thirty (30) days in advance of the required observations. The Observer is subject to approval by the Architect.
- C. Report the observations and the site decisions or instructions given to the applicators or installers that are supplemental or contrary to the manufacturers' written instructions.
- D. Refer to Section 01 33 00 - SUBMITTAL PROCEDURES, MANUFACTURER'S FIELD REPORTS article.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary heating.
 - 4. Temporary ventilation.
 - 5. Temporary water service.
 - 6. Temporary sanitary facilities.
- B. Construction Facilities:
 - 1. Storage sheds and trailers.
 - 2. Field office
 - 3. Temporary scaffolding
 - 4. Vehicular access.
 - 5. Parking.
 - 6. Progress cleaning and waste removal.
- C. Temporary Controls:
 - 1. Barriers
 - 2. Enclosures
 - 3. Dust control.
 - 4. Noise control.
 - 5. Pollution control.
 - 6. Fire Detection

1.02 TEMPORARY ELECTRICITY

- A. The Owner will pay the cost of energy used. Exercise measures to conserve energy. Utilize the Owner's existing power service.
- B. Permanent convenience receptacles may be utilized during construction.

1.03 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

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

1.04 TEMPORARY HEATING

- A. Existing heating equipment may be used.
- B. Exercise measures to conserve energy.

- C. The Contractor is to supplement with temporary heat devices as needed to maintain the specified conditions for construction operations. All temporary heating devices and associated fuel will be provided and paid for by the Contractor.
- D. Maintain a minimum ambient temperature of 50 degrees F in the areas where construction is in progress, unless indicated otherwise in the product Sections.

1.05 TEMPORARY VENTILATION

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

1.06 TEMPORARY WATER SERVICE

- A. The Owner will pay the cost of temporary water. Exercise measures to conserve energy. Utilize the Owner's existing water system, extend and supplement with temporary devices as needed to maintain the specified conditions for construction operations.

1.07 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain the required facilities and enclosures. Existing facility use is not permitted. Provide facilities at the time of project mobilization.

1.08 STORAGE SHEDS AND TRAILERS

- A. Storage Areas, Sheds and Trailers: Size to the storage requirements for the products of the individual Sections, allowing for access and orderly provision for the maintenance and for the inspection of Products to the requirements of Section 01 60 00.
- B. Maintenance and Cleaning
 - 1. Maintain the approach walks free of mud, water, and snow.
- C. Removal: At the completion of the Work remove the trailers, temporary buildings, utility services, and debris. Restore the areas to original condition.

1.09 FIELD OFFICE

- A. Existing building space may be used for a field office in location designated by the Owner.

1.10 TELEPHONE SERVICE

- A. The Contractor is required to ensure the on-site Project Supervisor maintains a cell phone in their possession for the duration of the Contract.

1.11 TEMPORARY SCAFFOLDING

- A. Contractor is to provide temporary scaffolding as necessary for construction purposes.
- B. The scaffolding is to be braced properly, assembled and installed as required to meet all OSHA requirements.
- C. Remove from the site all scaffolding, associated bracing and supports upon completion of construction. Repair all surfaces and site to original condition.

1.12 VEHICULAR ACCESS

- A. Provide unimpeded access for emergency vehicles. Maintain 20 foot width driveways with turning space between and around combustible materials.
- B. Provide and maintain access to fire hydrants and control valves free of obstructions.
- C. Use designated existing on-site roads for construction traffic.

1.13 PARKING

- A. Arrange for temporary surface parking areas to accommodate the construction personnel.
- B. Location must be approved by the Owner.
- C. Use of existing parking facilities by construction personnel is permitted.
- D. When site space is not adequate, arrange through the Owner for additional off-site parking.
- E. Use of designated existing on-site streets and driveways for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.
- F. Do not allow heavy vehicles or construction equipment in parking areas.

1.14 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain the site in a clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from the site periodically, weekly, or daily, as necessary to prevent an on-site accumulation of waste material, debris, and rubbish, and dispose off-site.
- C. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.15 BARRIERS

- A. Provide barriers to prevent unauthorized entry to the construction areas and to protect existing facilities from damage from the construction operations, or demolition.

1.16 ENCLOSURES

- A. Provide temporary fire resistant polyethylene dust drapes as required to separate the work areas from the Owner occupied areas, to prevent penetration of dust and moisture into the Owner occupied areas, and to prevent damage to the existing materials and equipment. Seal perimeter as required.

1.17 DUST CONTROL

- A. Execute the Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into the atmosphere.

1.18 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by the construction operations.
- B. Restrictions on Noise:
 - 1. Use equipment with well-maintained mufflers.
 - 2. Use the least noisy techniques practical.
 - 3. Schedule noisy activities when ambient background noise level is highest.
 - 4. Turn off all unneeded and idling equipment and engines.
 - 5. Locate noise sources as far as practical from noise sensitive locations.
 - 6. Orient noise sources away from noise sensitive locations

1.19 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent the contamination of soil, water, and the atmosphere from discharge of noxious, toxic substances, and pollutants produced by the construction operations.

1.20 FIRE DETECTION

- A. Before beginning any construction that can potentially trigger the existing fire detection system, notify the Owner and request to temporarily disconnect the system in the specific areas of construction, for as long as may be necessary.

PART-2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Product substitution procedures.

1.02 PRODUCTS

- A. Products: Means new material, machinery, components, fixtures, or systems forming the Work; but does not include the machinery or equipment used for the preparation, fabrication, conveying, or erection of the Work. Products may include the existing materials or components required or specified for reuse.
- B. Furnish products of qualified manufacturers suitable for the intended use. Furnish products of each type by a single manufacturer unless specified otherwise.
- C. Do not use materials and equipment removed from the existing premises, except as specifically permitted by the Contract Documents.
- D. Furnish interchangeable components of the same manufacturer for the components being replaced.

1.03 PRODUCT DELIVERY REQUIREMENTS

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

1.04 PRODUCT STORAGE AND HANDLING REQUIREMENTS

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

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

1.05 PRODUCT OPTIONS

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

1.06 PRODUCT SUBSTITUTION PROCEDURES

- A. Throughout these Specifications, types of materials may be specified by manufacturer's name, and product information in order to establish standards of quality and performance and not for the purpose of limiting competition.
- B. Inclusion of additional names of manufacturers, other than the Basis of Design manufacturer, does not imply acceptability of standard products from those manufacturers listed. All manufacturers listed shall conform, with modification as necessary, to criteria established by the specification for performance, efficiency, materials, finishes and special accessories along with, at a minimum, matching the Basis of Design product.
- C. No substitutions will be considered prior to receipt of Bids unless written request for approval (by hard copy or email) has been received by the Architect at least 10 calendar days prior to the Bid due date. If the product substitution is approved prior to receipt of the Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals announced in any other manner.

It will be the Architect's and Owner's option to consider a formal request, review and acceptance of a product substitution following award of the contract. For all requests made after award of the contract, the Architect will review the requests with reasonable promptness and notify the Contractor in writing of the decision to accept or reject the substitution.

- D. A request for substitution of any manufacturer or product not named in a specification section is to be submitted in accordance with the following.
1. Document each request with complete data substantiating the compliance of a proposed Substitution with the Contract Documents.
 2. A request constitutes a representation that the Contractor:
 - a. Has investigated the proposed product and determined that it is equal to or superior in all respects to the specified product.
 - b. Will provide the same warranty for the substitution as for the specified product.
 - c. Will coordinate the installation and make changes to other Work that may be required for the Work to be complete with no additional cost to the Owner.
 - d. Waives claims for additional costs or time extension that may subsequently become apparent.
 - e. Will coordinate installation with all affected trade Contractors, specialty Contractors and the like and will be responsible for any and all costs which may arise as a result of this substitution.
 - f. Will reimburse the Owner and the Architect for review or redesign services associated with re-approval by the authorities having jurisdiction.
- E. Substitutions will not be reviewed when a substitution is implied on the Shop Drawing or Product Data submittals without a separate written request or when acceptance will require revision to the Contract Documents.
- F. If the Contractor proposes to use a material which, while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, the Contractor shall inform the Architect in writing of the nature of such deviations at the time the material is submitted for review.
- G. Substitution Submittal Procedure:
1. Submit the Request for Substitution letter, Shop Drawings, Product Data, direct comparison table and the certified test results attesting to the proposed product equivalence by E-mail via an electronic format (PDF) copy to the Architect. Assemble package into a single indexed file incorporating all the required information.
 2. The Contractor shall submit a separate request for each product substitution.
 3. Provide direct comparison between the specified product and the proposed substitution. The burden of proof is on the proposer.
Supporting data to be submitted to permit a fair evaluation of the proposed substitution must address:
 - a. Performance;
 - b. Capacity;
 - c. Efficiency;
 - d. Safety;
 - e. Function;
 - f. Appearance;
 - g. Quality and durability;

- h. Finish;
 - i. Warranty terms and conditions;
 - j. Directly compare, side-by side, in table format, all listed testing agency performance requirements;
 - k. Delivery times and effect on schedules, if any;
 - l. Changes in space requirements or affect on other elements of work, if any;
 - m. Availability of maintenance service and source of replacement materials, if applicable.
- H. The Contract Documents are intended to produce a building of consistent character and quality of design. All components of the building including visible items of mechanical and electrical equipment have been selected to have a coordinated design in relation to the overall appearance of the building. The Architect shall judge the design and appearance of proposed substitutes on the basis of their suitability in relation to the overall design of the Project, as well as for their intrinsic merits. The Architect will not approve as equal to materials specified proposed substitutes which, in the Architect's opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the Project. In order to permit coordinated design of color and finishes the Contractor shall, if required by the Architect, furnish the substituted material in any color, finish, texture, or pattern which would have been available from the manufacturer originally specified, at no additional cost to the Owner.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 70 00

EXECUTION REQUIREMENTS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Examination.
- B. Preparation.
- C. Protection of adjacent construction.
- D. Cutting and patching.
- E. Special procedures.
- F. Progress cleaning and waste removal.
- G. Final cleaning.
- H. Starting and adjusting of systems.
- I. Demonstration and Instructions.
- J. Protecting Installed Construction.

1.02 EXAMINATION

- A. Acceptance of Conditions:
 - 1. Verify that the existing applicable site conditions, substrates, or substrate surfaces are acceptable or meet the specific requirements of the individual specifications Sections, for subsequent Work to proceed.
 - 2. Verify that the existing substrate is capable of structural support or attachment of new Work being applied or attached.
 - 3. Examine and verify specific conditions described in the individual specifications Sections.
 - 4. Verify that utility services are available, of the correct characteristics, and in the correct locations.
 - 5. Beginning of new Work, that relies upon the quality and proper execution of the Work of a preceding trade, means acceptance of that preceding Work as appropriate for the proper execution of subsequent Work.
 - 6. Acceptance of preceding Work that can be shown later to have adversely affected proper performance of new Work may result in removal and repeat performance of all Work involved at no cost to the Owner.

1.03 PREPARATION

- A. Clean substrate surfaces prior to applying the next material or substance.
- B. Seal cracks or openings of the substrate prior to applying the next material or substance.
- C. Apply a manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.
- D. Prior to the application, installation, or erection of any products and product components, perform any other preparatory operations, or surface or substrate modifications, as may be specified or directed by the product manufacturers.

1.04 PROTECTION OF ADJACENT CONSTRUCTION

- A. Protect the existing adjacent properties and provide special protection where specified in the individual Specification Sections.
- B. Protect the existing finished floors, stairs, and other existing surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- C. Repair adjacent properties damaged by the construction operations to the original condition to the satisfaction of the Owner.
- D. Prohibit unnecessary traffic from the existing landscaped areas.
- F. Restore the grassed landscaped areas damaged by the construction operations to a full healthy growth by installing loam and sod.

1.05 CUTTING AND PATCHING

- A. Employ the original, or skilled and experienced installer to perform cutting and patching.
- B. Submit a written request in advance of the cutting or altering elements which affect:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of the element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Existing construction, or the Work of separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill, to complete the Work, and to:
 - 1. Fit the several parts together, to integrate with the other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in the elements of Work for penetrations of mechanical and electrical Work.
- D. Execute Work by methods that will avoid damage to other Work, and provide proper surfaces to receive patching and finishing.

- E. Cut masonry, concrete, and other rigid materials using a masonry saw or core drill.
- F. Restore the Work with new Products in accordance with the requirements of Contract Documents.
- G. Fit Work tight to the pipes, sleeves, ducts, conduits, and other penetrations through surfaces.
- H. At the penetration of fire rated partition, ceiling, or floor construction completely seal the voids with a fire rated or fire resistant material to the full thickness of the penetrated element as required to equal the rating of the surrounding construction.
- I. Refinish surfaces to match the adjacent finishes. For continuous surfaces refinish to nearest intersection; for an assembly refinish the entire unit.
- J. Identify any hazardous substance or conditions exposed during the Work to the Architect for a decision or remedy.

1.06 SPECIAL PROCEDURES

- A. Materials: As specified in the product Sections; match the existing with new products, or salvaged products as appropriate, for patching and extending work.
- B. Employ a skilled and experienced installer to perform alteration work.
- C. Cut, move, or remove items as necessary for access to the alterations and renovation Work. Replace and restore at completion.
- D. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace the materials as specified for finished Work.
- E. Remove the debris and abandoned items from the area and from concealed spaces.
- F. Prepare the surface and remove surface finishes to provide the installation of new Work and finishes,
- G. Close the openings in exterior surfaces to protect the existing Work from the weather and extremes of temperature and humidity.
- H. Remove, cut, and patch the Work in a manner to minimize damage and to provide a means of restoring products and finishes to the original or specified condition.
- I. Where new Work abuts or aligns with the existing, provide a smooth and even transition. Patch the Work to match the existing adjacent Work in texture and appearance.
- J. When finished surfaces are cut so that a smooth transition with the new Work is not possible, terminate the existing surface along a straight line at a natural line of division and submit a recommendation to the Architect for review.
- K. Where a change of plane of 1/4 inch or more occurs, submit a recommendation for providing a smooth transition to the Architect for review.

- L. Patch or replace the portions of existing surfaces which are damaged, or showing other imperfections.
- M. Finish surfaces as specified in the individual product Sections or as indicated on the Drawings.

1.07 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain the site in a clean and orderly condition.
- B. Remove the debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Collect and remove the waste materials, debris, and rubbish from the site periodically or weekly and dispose of off-site.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.08 FINAL CLEANING

- A. Execute final cleaning of areas affected by the Work prior to the final project assessment.
- B. Clean the equipment and fixtures to a sanitary condition using cleaning materials appropriate to the surface and material being cleaned.
- C. Clean or replace filters of operating equipment as directed by the Architect.
- E. Clean the debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean the site; sweep the paved areas, rake clean the landscaped surfaces.
- G. Remove the waste and surplus materials, rubbish, and the construction facilities from the site.

1.09 STARTING AND ADJUSTING OF SYSTEMS

- A. Coordinate the schedule for the starting and adjusting of various equipment and systems.
- B. Notify the Architect and the Owner seven days prior to the starting and adjusting of each item.
- C. Verify that each piece of equipment or system has been checked for the proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.
- D. Verify that the tests, meter readings and the specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute the starting and adjusting under the supervision of the responsible Contractor's personnel or manufacturer's representative, in accordance with the manufacturer's instructions.

- G. Adjust the operating Products and equipment to ensure smooth and unhindered operation.
- H. When specified in the individual specifications Section, require the manufacturer to provide the authorized representative to be present at the site to inspect, check, and approve the equipment or system installation prior to starting, and to supervise the placing of equipment or system in operation.
- I. Submit a written report in accordance with Section 01400 that the equipment or system has been properly installed and is functioning correctly.

1.10 DEMONSTRATION AND INSTRUCTIONS

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

1.11 PROTECTING INSTALLED CONSTRUCTION

- A. Protect the installed Work and provide special protection where specified in the individual specification sections.
- B. Provide temporary and removable protection for the installed products. Control activity in the immediate work area to prevent damage.
- C. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- D. Repair or replace the installed Work damaged by construction operations, as directed by the Architect.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

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SECTION 01 74 19

WASTE MATERIALS MANAGEMENT AND RECYCLING

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WASTE MANAGEMENT GOALS FOR THE PROJECT

- A. The Owner has established that this Project shall generate the least amount of waste possible and that processes shall be employed that ensure the generation of as little waste as feasible including prevention of damage due to mishandling, improper storage, contamination, inadequate protection or other factors as well as minimizing overall packaging and poor quantity estimating.
- B. Of the inevitable waste that is generated, the waste materials designated in this specification shall be salvaged for reuse or recycling. Waste disposal in landfills or incinerators shall be minimized. On new construction projects this means careful recycling of job site waste, on demolition projects this also means careful removal for salvage.
- C. The Contractor is to follow the NE-CHPS Materials Prerequisite 3: Site Waste Management requirements to recycle, reuse and/or salvage at least 50% (by weight) of all non-hazardous construction and demolition waste, not including land clearing and associated debris.

1.3 SUMMARY:

- A. This Section includes required salvage and recycling of the following waste materials and applies to all such listed waste materials produced during the course of this Contract:
 - 1. Land Clearing Debris: Solid waste generated solely from land clearing operations, such as stumps and trees.
 - 2. Concrete, Masonry, and Other Inert Fill Material: Concrete, brick, rock, clean soil not intended for other on-site use, broken up asphalt pavement containing no ABC stone, clay, concrete, or other contaminants, and other inert material.
 - 3. Metals: Metal scrap including iron, steel, copper, brass, and aluminum.
 - 4. Untreated Wood: Unpainted, untreated dimensional lumber, plywood, oriented strand board, masonite, particleboard, and wood shipping pallets.
 - 5. Gypsum Wallboard Scrap: Excess drywall construction materials including cuttings, other scrap, and excess materials.
 - 6. Cardboard: Clean, corrugated cardboard such as used for packaging, etc.
 - 7. Paper: Discarded office refuse such as unwanted files, correspondence, etc.
 - 8. Plastic Buckets: Containers for various liquid and semi-solid or viscous construction materials and compounds.
 - 9. Beverage Containers: Aluminum, glass, and plastic containers.
 - 10. Other Mixed Construction and Demolition Waste: Solid waste resulting solely from construction, remodeling, repair, or demolition operations on pavement, buildings, or other structures exclusive of waste materials listed herewith.
 - 11. Materials to be salvaged if possible:

- a. Dimensioned Lumber and Heavy Timbers.
 - b. Structural Steel.
 - c. Insulation.
 - d. Brick and block.
 - e. Electric Equipment and Light Fixtures.
 - f. Plumbing fixtures and brass.
- B. Non-Recyclable Waste: Collect and segregate non-recyclable waste for delivery to a permitted landfill site.
1. Mixed Solid Waste: Solid waste usually collected as a municipal service, exclusive of waste materials listed above.

1.4 HAZARDOUS MATERIAL SUSPICION

- A. If, during the course of construction, the Contractor suspects a material to contain asbestos, all work involving the material is to be stopped and the Architect notified immediately of the suspicion. Until the material is confirmed to be safe or tested and determined to be an asbestos containing material, the Contractor is to assume it contains asbestos and is to avoid contact. Upon notification of its composition the Architect will determine the course of action and inform the Contractor accordingly.

1.5 DEFINITIONS:

- A. Waste Materials are defined as large and small pieces of the materials indicated which are excess to the contract requirements and generally include materials which are to be salvaged from existing construction and items of trimmings, cuttings and damaged goods resulting from new installations, which can not be effectively used in the Work.

1.6 SUBMITTALS:

- A. **NOTE:** The Owner is applying for reimbursement from the state through conformance with the program Northeast Collaborative for High Performance Schools (NE-CHPS) thus the following items are required to be submitted by the General Contractor to the Architect.
- B. Construction Waste Management Plan: Before start of construction, submit for the approval of the Architect a construction waste management plan indicating how Contractor proposes to collect, segregate, and dispose of all construction wastes and debris produced by the work of this Contract. Show compliance with regulations specified under "Quality Assurance" article below. Include a list of recycling facilities to which indicated recyclable materials will be distributed for disposal. Identify materials that are not recyclable or otherwise conservable that must be disposed of in a landfill or other means acceptable under governing State and local regulations. List permitted landfills and/or other disposal means to be employed. Indicate any instances where compliance with requirements of this specification does not appear to be possible and request resolution from the Architect.
- C. Delivery Receipts: Provide to the Construction Quality Manager delivery receipts for waste materials salvaged and sent to permitted waste materials processors or recyclers within 48 hours of delivery that indicate the location and name of firm accepting recyclable waste materials, types of materials, net weights of each type, date of delivery and value of materials. Hazardous weights are not to be included.

- D. Application for Payments: The Contractor shall submit with each Application for Payment a summary of waste materials, recycled, salvaged and disposed of using a form generated by the Contractor and approved by the Architect. Failure to submit this information shall render the Application for Payment incomplete and shall delay Payment. The Summary shall contain the following information: For each material salvaged and recycled from the Project, include the amount (in cubic yards or tons or in the case of salvaged items state quantities by number, type and size of items) and the destination (i.e. recycling facility, used building materials yard). For each material land filled or incinerated from the Project, include the amount (in cubic yards or tons) of material and the identity of the landfill, incinerator or transfer station.

1.7 QUALITY ASSURANCE:

- A. Regulatory Requirements: Comply with all applicable requirements of the federal, state or local authorities concerning Management of Construction, Demolition, Land Clearing, Inert, and Yard Trash Debris
- B. Disposal Sites, Recyclers, and Waste Materials Processors: Use only facilities properly permitted by the State and by local authorities where applicable.
- C. Pre-Construction Waste Management Conference: Prior to beginning work at the site, schedule and conduct a conference to review the Construction Waste Management Plan and discuss procedures, schedules and specific requirements for waste materials recycling and disposal. Discuss coordination and interface between the Contractor and other construction activities. Identify and resolve problems with compliance with requirements.
 - 1. Attendees: The Contractor and related Contractor personnel associated with the work of this section, including personnel to be in charge of the waste management program; Owner, and the Architect.
 - 2. Plan Revision: Make any revisions to the Construction Waste Management Plan agreed upon during the meeting and incorporate resolutions agreed to be made subsequent to the meeting. Submit the revised plan to the Architect for approval.
- D. Implementation: Designate an on-site party responsible for instructing workers and implementing the Construction Waste Management Plan. Distribute copies of the Construction Waste Management Plan to the job site foreman and each subcontractor. Include waste management and recycling in worker orientation. Provide on-site instruction on appropriate separation, handling, recycling, and salvaging methods to be used by all parties at the appropriate stages of the work at the site. Include waste management and recycling discussion in pre-fabrication meetings with subcontractors and fabricators. Also include discussion of waste management and recycling in regular job meetings and job safety meetings conducted during the course of work at the site.

1.8 STORAGE AND HANDLING:

- A. Site Storage: Remove all indicated recyclable materials from the work location to approved containers daily. Failure to remove waste materials will be considered cause for withholding payment and termination of Contract.
- B. Position covered containers for recyclable waste materials at a designated location on the Project Site. Select a location for the recyclable materials containers separated from that of general waste and rubbish containers. Provide separate collection containers for a minimum of the following materials:
 - 1. Untreated lumber.
 - 2. Paper, paper products, and cardboard.
 - 3. Plastics.
 - 4. Metals.
 - 5. Glass.
 - 6. Other salvageable materials.
- C. Change out loaded containers for empty ones as demand requires, but not less than weekly.
- D. Handling: Deposit all indicated recyclable materials in the containers in a clean (no mud, adhesives, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.
- E. If the contamination chemically combines with the material so that it can not be cleaned, do not deposit into the recycle containers. Comply disposal with all legal and regulatory requirements.

1.9 PROJECT/SITE CONDITIONS:

- A. Environmental Requirements: Transport recyclable waste materials from the Work Area to the recycle containers and carefully deposit in the containers without excess noise and interference with other activities, in a manner to minimize noise and dust. Reclose container covers immediately after materials are deposited.
 - 1. Do not place recyclable waste materials on the ground adjacent to a container.
- B. Existing Conditions: Coordinate with "Instructions to Bidders" and "Supplementary Conditions".

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 WASTE MANAGEMENT:

- A. General: Implement waste management procedures in accordance with approved construction waste management plan. Maintain procedure throughout the life of this Contract.
- B. Source Separation: Separate, store, protect, and handle at the project site all identified recyclable and salvageable waste products to prevent contamination of materials and maximize recyclability and salvageability of materials.

- C. Arrange for the regular collection, transport from the site, and delivery to respective approved recycling centers of indicated recyclable waste materials. Maintain records accessible to the Architect for verification of construction waste materials recycling.
- D. Delivery Receipts: Arrange for timely pickups from the site or deliveries to approved recycling facilities of designated waste materials to keep construction site clear and prevent contamination of recyclable materials. Keep and maintain records of all deliveries to recycling facilities and all pickups of waste materials at the site by others as specified above.

3.2 RECYCLABLE WASTE MATERIALS HANDLING:

- A. General: The following paragraphs supplement handling requirements for various materials identified for classification and recycling listed in Part 1 "Summary" article above.
- B. Paper: Classify and handle waste paper goods as follows:
 - 1. Bond Paper: As generally found in the construction offices and used for specifications, correspondence, copiers, printers and FAX machines. Collect in a separate container at each workstation and deposit loose in the appropriate recycle container daily.
 - 2. Newsprint: Newspapers and tabloid style advertising. Collect in a single location and deposit daily in the appropriate recycle container.
 - 3. Prints (drawings): Set up a single location for collection. Roll together to minimize space. Deposit daily in the appropriate recycle container.
- C. Packaging materials:
 - 1. Cardboard and paperboard cartons and boxes: Knock-down, fold flat and deposit in the appropriate recycle container.
 - 2. Paper packing materials (separators, stiffeners, etc.) shall be placed in the same container.
 - 3. Newsprint, used as packing (shredded or whole), shall be deposited in the recyclable container for newsprint.
 - 4. Plastic (polystyrene peanuts and other shapes) shall be deposited in the recyclable container for plastics.
 - 5. Metal and plastic banding materials shall be deposited in the appropriate container.
- D. Metals: Cut all items to lengths and sizes to fit within the container provided, when necessary. Where there is sufficient quantity of a specific recyclable waste item (for example; salvaged metal roofing or duct work), make special arrangements for items to be bundled, banded or tied, and stack in a designated location for a special pick-up. Coordinate all special arrangements with the Architect.
- E. Plastics: Collect recyclable plastics (polystyrene and others specifically marked for recycling) daily from work areas and deposit in designated containers.
- F. Glass: Remove waste glass products (sheet, bottles, etc.) daily from the work area and deposit in designated containers. Where glass containers are marked for separation by color or type, segregate glass accordingly. Glass containing imbedded wire (typical in some fire rated doors having glazed lights) is not recyclable.
- H. Other Items: Where recyclability classification of any given waste material is unclear, verify with the Architect.

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SECTION 01 78 00

CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Closeout procedures.
- B. Quality assurance.
- C. Maintenance service.
- D. Owner's Manuals
- E. Operations and maintenance manuals.
- F. Materials and finishes manuals.
- G. Equipment and systems manuals
- H. Spare parts and maintenance materials.
- I. Product warranties and product bonds.
- J. Project Record documents.
- K. Project close out inspections – Punch List

1.02 CLOSEOUT PROCEDURES

- A. Submit a written certification that the Contract Documents have been reviewed, the Work has been inspected, and that the Work is complete in accordance with the Contract Documents and is ready for the Architect's review.
- B. Provide submittals to Architect that are required by the governing or other authorities, including the following closeout documents:
 - 1. AIA Document G706 - Contractor's Affidavit of Payment of Debts and Claims, 1994 Edition.
 - 2. AIA Document G706A - Contractor's Affidavit of Release of Liens, 1994 Edition.
 - 3. AIA Document G707 - Consent of Surety to Final payment, 1994 Edition.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. The Owner will occupy all portions of the building as specified in Section 01 10 00.

1.03 QUALITY ASSURANCE

- A. Employ personnel assembling submittals experienced in the maintenance and the operation of the described products and systems.

1.04 MAINTENANCE SERVICE

- A. Submit a contract for furnishing service and maintenance of the components indicated in the specification Sections for one year from date of Substantial Completion, or during the warranty period, whichever period of time is the longest.
- B. Provide for an examination of the system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include a systematic cleaning, examination, adjustment, and lubrication of the components. Repair or replace the parts whenever required. Use the parts produced by the manufacturer of the original component.
- D. Do not assign or transfer the maintenance service to an agent or Subcontractor without the prior written consent of the Owner.

1.05 OWNER'S MANUALS

- A. Submit the data for Operations and Maintenance, Materials and Finishes, and Equipment and Systems Manuals bound in 8-1/2 x 11 inch text pages, in maximum 2 inch size, D side three - ring commercial quality binders with durable cleanable plastic covers.
- B. Prepare binder covers with the printed title of the manual, title of the project, and the subject matter of binder when multiple binders are required.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Drawings: Provide with reinforced punched binder tab. Bind in with the text; fold the larger drawings to the size of the text pages.
- E. Submit one copy of the completed volumes for review. They will be reviewed and returned with the Architect's comments. Revise the content of the manuals as required prior to final submission.
- F. Submit one set of revised final volumes in final form.
- G. Submit one copy of all the manuals for Operations and Maintenance, Materials and Finishes, and Equipment and Systems in PDF electronic format on a Compact Disc or DVD.

1.06 OPERATIONS AND MAINTENANCE MANUALS

- A. Contents: Prepare the Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 - 1. Part 1: Directory, listing the names, addresses, and telephone numbers of the Architect, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by the specification Section. For each category, identify the names, addresses, and telephone numbers of the Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties and bonds.
 - e. MSDS for applicable products.

1.07 MATERIALS AND FINISHES MANUALS

- A. Instruction for Care and Maintenance: include manufacturer's instructions for cleaning agents and methods, precautions against detrimental agents and methods, and a recommended schedule for cleaning and maintenance.
- B. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- C. Include Material Safety Data Sheets (MSDS) for all applicable products. These are required to provide both workers and emergency personnel with the proper procedures for handling or working with a particular substance. MSDS's include information such as physical data (melting point, boiling point, flash point etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill/leak procedures.
- D. Additional Requirements: As specified in the individual product specification Sections.
- E. Include a listing in the Table of Contents for design data, with a tabbed flysheet and a space for the insertion of data.

1.08 EQUIPMENT AND SYSTEMS MANUALS

- A. For equipment, or component parts of equipment put into service during construction and operated by the Owner, submit documents within 10 days after acceptance.
- B. Each Item of Equipment and Each System: Include a description of the unit or system, and the component parts. Identify the function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; by label machine.
- D. Include color-coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Include a servicing and lubricating schedule, and a list of lubricants required.
- H. Include the manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by the controls manufacturer.
- J. Include the original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Include control diagrams by the controls manufacturer as installed.
- L. Include the Contractor's coordination drawings, with color-coded piping diagrams as installed.
- M. Include charts of valve tag numbers, with the location and function of each valve, keyed to the flow and control diagrams.
- N. Include a list of the original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- O. Include test and balancing reports as specified in Section 01 43 00.
- P. Additional Requirements: As specified in the individual product specification Sections.
- Q. Include a listing in the Table of Contents.

1.09 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in the quantities specified in the individual specification Sections.
- B. Deliver to the Project site and place in a location as directed by the Owner; obtain a receipt prior to final payment.

1.10 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by the responsible subcontractors, suppliers, and manufacturers, within 10 days after the completion of the applicable item of work.
- B. Execute and assemble the transferable warranty documents and bonds from the subcontractors, suppliers, and manufacturers.
- C. Verify that the documents are in the proper form, contain full information, and are notarized.
- D. Co-execute the submittals when required.
- E. Submit two copies in D side three ring binders with a durable plastic cover.
- F. Submit prior to the final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with the Owner's permission, submit the documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after the Date of Substantial Completion, prior to the final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond the Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty or bond period.

1.11 PROJECT RECORD DOCUMENTS

- A. Maintain on the site one set of the following record documents; record actual revisions of the Work for all trades:
 - 1. Construction 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 instructions for assembly, installation, and adjusting.
- B. Ensure the entries are complete and accurate, enabling future reference by the Owner.
- C. Store the record documents separate from the documents used for construction.
- D. Record information concurrent with the construction progress, not less than weekly.

- E. Specifications: Legibly mark and record at each product Section description of the 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. Construction Record Drawings and Shop Drawings: Legibly mark each item to record the actual construction including:
 - 1. Measured locations of internal utilities and appurtenances concealed in the construction.
 - 2. Field changes of dimension and detail.
 - 3. Details not on the original contract construction drawings.

- G. Legibly marked Specifications, and legibly marked Record Construction Drawings and Shop Drawings shall constitute the Project Record Documents.

- H. Update the on-site Project Record Documents on a regular basis. Monthly payments will not be processed if Project Record Documents are not maintained up to date.

- I. At completion of the Work of the Contract, the Architect will furnish the Contractor with an electronic copy of the construction drawings in AutoCad or Autodesk Revit format, and the Project Manual content in Adobe Acrobat PDF format.

- J. Transfer the information from the Project Record Documents onto the electronic documents (Drawings in AutoCad or Autodesk Revit format and the Project Manual in Adobe Acrobat PDF format copied onto a CD or DVD ROM disc). These documents will constitute the As-Built Documents.
Deliver the As-Built Documents to the Architect on two copies of compact disc and paper. The two paper copies are to be bound and printed full size.
Also deliver the paper Project Record Documents to the Architect.

- K. The Architect will review the As-Built Documents and compare them with the Project Record Documents for accuracy, and if necessary return them to the Contractor for final correction.
At the time of final submission of the As-Built documents, submit the final Application for Payment.

- L. No review or receipt of record of As-Built Documents by the Architect or the Owner shall be interpreted as a waiver of any deviation from the Contract Documents or Shop Drawings , or in any way relieve the Contractor from responsibility to perform the Work in accordance with the Contract Documents and the Shop Drawings to the extent they are in accordance with the Contract Documents

- M. At completion of the Work of the Contract submit to the Architect a summary of waste materials, recycled, salvaged and disposed of as outlined in Section 01 74 19.
The Summary shall contain the following information:
For each material salvaged and recycled from the Project, include the amount (in cubic yards or tons or in the case of salvaged items state quantities by number, type and size of items) and the destination (i.e. recycling facility, used building materials yard). For each material land filled or incinerated from the Project, include the amount (in cubic yards or tons) of material and the identity of the landfill, incinerator or transfer station.

- N. At completion of the Work of the Contract submit to the Architect (as outlined in Section 01 74 19) delivery receipts for waste materials salvaged and sent to permitted waste materials processors or recyclers that indicate the location and name of firm accepting recyclable waste materials, types of materials, net weights of each type, date of delivery and value of materials.
- O. At completion of the Work of the Contract submit to the Architect a table indicating information pertaining to construction materials used on the project that includes the following:
 - Name of the material
 - Amount of low emissive VOC
 - Percentage of pre-consumer recycled content
 - Percentage of post consumer recycled content
 - Distance product was manufactured from construction site (Greater or less than 500 miles)

Also submit written documentation substantiating the information in the form of a manufacturer's cut sheet, material safety data sheet or letter from the manufacturer.

1.12 PROJECT CLOSE OUT INSPECTIONS - PUNCH LIST

- A. When the work has reached such a point of completion that the building or buildings, equipment, apparatus or phase of construction or any part thereof required by the Owner for occupancy or use can be so occupied and used for the purpose intended, the Contractor, prior to notification to the Architect, shall make a preliminary inspection of the Work to insure that all requirements of the Contract have been met and the Work is substantially complete and is acceptable. Upon such notification, the Owner or the Architect and the consulting Engineers shall make detailed inspection of the Work to insure that all requirements of the Contract have been met and the Work is complete and is acceptable.
- B. Within ten (10) calendar days of notification, the Architect and the consulting Engineers will perform the inspection and a copy of the report of the inspection shall be furnished to the Contractor so that the Contractor may proceed without delay with any part of the Work found to be incomplete or defective. The Contractor shall complete the items listed within thirty (30) calendar days and notify the Owner and Architect
- C. When the items appearing on the report of inspection have been completed or corrected, the contractor shall so advise the Owner and the Architect. After receipt of this notification, the Owner or the Architect and consulting Engineers shall reinspect and inform the Contractor of any remaining items.

A copy of the report of the final inspection containing all remaining contract exceptions, omissions and incompletions shall be furnished to the Contractor within seven (7) calendar days of notification.
- D. The Contractor shall within fourteen (14) calendar days complete the items listed on the inspection report and provide notification of completion and all remaining contract exception, omissions and incompletions from the Contractor, the Owner and the Architect and consulting Engineers will reinspect the Work to verify completion of the exception items appearing on the report of final inspection.

Upon completion of reinspections, the Architect will prepare a certificate of final acceptance or will furnish to the Contractor a copy of the report of the Architect's reinspection detailing Work that is incomplete or obligations that have been fulfilled but are required for final acceptance.

The Contractor shall compensate the Architect and all consulting Engineers for services performed on Punch List inspections beyond the original inspection and two reinspections of the same area through a credit change order reducing the total contract amount.

- E. Upon Substantial Completion of the Work, the Contractor will be paid all retainage, less one hundred fifty percent (150%) of the value attributable to “punch list” work. As items on the punch list are completed, the Contractor will be paid one hundred fifty percent (150%) of their value at the next progress payment.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 81 14

ENVIRONMENTAL IMPACT OF MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to this section.

1.2 WORK INCLUDED:

- A. Objectives: To obtain acceptable Indoor Air Quality (IAQ) for the completed project and minimize the environmental impacts of the construction and operation, the Contractor during the construction phase of this project shall implement the following procedures singly or in combination:
 - 1. Select products that minimize consumption of non-renewable resources, consume reduced amounts of energy and minimize amounts of pollution to produce, and employ recycled and/or recyclable materials. Obtain Architect's approval of all materials listed in Part 2 prior to placing the order with the manufacturer of the material.
 - 2. Maintain a materials log book and verification that materials used have been reviewed for environmental considerations as outlined in this section.
 - 3. Control sources of potential IAQ pollutants by controlled selection of materials and processes used in project construction in order to attain acceptable IAQ as defined in this section.
- B. Products and processes that achieve the above objectives to the extent currently possible and practical have been selected and shown in the Contract Documents. The Contractor is responsible to maintain and support these objectives in developing means and methods for performing the work of this Contract and in proposing product substitutions and/or changes to specified processes.

1.3 RELATED WORK:

- A. Division 1 sections: "Indoor Air Quality Management During Construction", and "Waste Materials Management and Recycling".

1.4 SUBMITTALS:

- A. Submit the following in accordance with Conditions of the Contract and Division 1 specification sections.
 - 1. Submit as part of the Division 1 Project Closeout documents indicating for each material the VOC content, the recycled content, and the Manufacturer's Safety Data Sheet (MSDS).

1.5 QUALITY ASSURANCE:

- A. As part of the Preconstruction Meeting specified in Division 1 discuss the IAQ and environmental impact compliances required by this Contract. The purpose of this agenda item is to develop a mutual understanding of the IAQ and environmental impact program requirements, and coordination of the Contractor's management of the program with the Architect.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. General: The following special IAQ and environmental impact requirements apply to materials specified in their respective technical specification sections of this Project Manual. See Tables 2.1 and 2.2 for definitions of low VOC content and recycled content.

The following list are qualities requested to be attained to the best ability of the Contractor for each of the described materials in the pursuit to achieve a more environmentally compatible building.

- B. Division 03 - Concrete:
1. Cast-in-Place Concrete:
 - a. Reinforcing steel shall maximize recycled scrap steel content.
 - b. Form release agents shall be low VOC content.
 - c. Liquid membrane-forming curing and sealing compound shall be low VOC content.
- C. Division 04 - Masonry:
1. Concrete Unit Masonry:
 - a. Concrete Unit Masonry shall maximize the use of recycled materials.
 - b. Reinforcing bars shall maximize the use of recycled steel.
- D. Division 05 - Metals:
1. Structural Steel: Framing steel shall maximize the use of recycled steel.
- E. Division 06 - Wood and Plastics: Wood products:
1. Each specified solid and veneer wood species must originate from a sustainably managed forest certified by a Forest Stewardship Council (FSC) accredited certification group such as Smartwood or Scientific Certification Systems (SCS).
 2. Fiberboard used as blocking, millwork, casework substrate, underlay and door cores must be urea-formaldehyde free, and not exceed ANSI A208.1-1993 emission standard of 0.20 ppm of formaldehyde.
 3. Structural fiberboard (OSB, MDF, and particleboard) shall maximize post-consumer waste material.
- F. Division 07 - Thermal and Moisture Protection:
1. Building Insulation:
 - a. Insulation materials manufactured using chlorofluorocarbons (CFCs) shall not be used. (CFCs have been completely phased out of U. S. manufactured insulation products.)
 - b. Extruded polystyrene insulation shall not be manufactured with chlorofluorocarbon (CFC) blowing agent and shall maximize recycled content.
 - c. Fiberglass batt insulation, fiberglass board insulation, and mineral wool insulation shall maximize use of recycled material.
 - d. Mineral wool fire safing insulation shall maximize recycled material.
 2. Single-Ply Membrane Roofing: Rigid insulation manufactured with chlorofluorocarbon (CFC) blowing agents shall not be used.
 3. Joint Sealants:

- a. Interior sealants shall not contain: mercury, butyl rubber, neoprene, SBR (styrene butadiene rubber), or nitrile.
 - b. Silicone sealants shall be low VOC content.
 - c. Polyurethane sealants containing mercury shall not be used.
 - d. Compressible foam joint fillers, polyester polyurethane foam impregnated with neoprene rubber or acrylic ester styrene copolymer used in this facility shall not be manufactured with CFC blowing agents.
 - e. Sealants formulated with aromatic solvents (organic solvent with a benzene ring in its molecular structure) fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, or their components shall not be used.
- G. Division 09 - Finishes:
- 1. Paint and Polychromatic Finish Coating:
 - a. Do not use water based paints formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure), formaldehyde, halogenated solvents, mercury or mercury compounds, or tinted with pigments of lead, cadmium, chromium VI and their oxides. Water based paints shall be low VOC and shall have a flash point of 61 degrees C or greater.
 - b. Where it is necessary to use solvent-based paints, they shall be formulated for low VOC emissions and shall not be formulated with formaldehyde, halogenated solvents, mercury or mercury compounds, or tinted with pigments of lead, cadmium, chromium VI and their oxides, nor formulated with more than 10% aromatic hydrocarbons by weight.
 - c. The following shall be low VOC and not be formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure) formaldehyde, halogenated solvents, mercury or mercury compounds, or tinted with pigments of lead, cadmium, chromium VI and their oxides.
 - High performance water based acrylic coatings.
 - Pigmented acrylic sealers.
 - Catalyzed epoxy coatings.
 - High performance silicone grafted epoxy coatings.

Table 2.1 Definition of Low VOC Content Levels

<u>Material or Product</u>	<u>Low VOC Content Level</u>
Form Release Agents	350 g/L VOC content
Water based Joint Sealants	50 g/L VOC content
Non-water based Joint Sealants	350 g/L VOC content
Water-based Paint & Polychromatic finish coatings	150 g/L VOC content
Solvent -based Paint	380 g/L VOC content
High Performance Water-Based Acrylic coatings	250 g/L VOC content
Pigmented Acrylic Sealers	250 g/L VOC content
Catalyzed Epoxy coatings	250 g/L VOC content
High Performance Silicone	250 g/L VOC content
Liquid membrane-forming curing & sealing compound	350 g/L VOC content

Table 2.2 Required Minimum Recycled Content of Materials

<u>Material or Product</u>	<u>Recommended Recycle Content</u>
Reinforcing Steel in Concrete	60% recycled scrap steel 1
Reinforcing Bars in Precast Concrete	60% recycled steel 1
Concrete Unit Masonry	50% recycled content
Reinforcing Bars in Concrete Unit Masonry	60% recycled steel 1
Framing steel	30% recycled steel 1
Fiberglass batt insulation	20% recycled glass cullet ²
Fiberglass board insulation	20% recycled glass cullet ²
Mineral wool insulation	75% recycled material (slag) ²
Mineral wool fire safing insulation	75% recycled material by weight (slag) ²
Mineral Fiber Sound Attenuation Blankets	75% recovered material by weight (slag) ²
Steel studs, runners, and channels	60% recycled steel 1
Hydromulch	100% recovered materials ²
Structural fiberboard	80-100% recycled content ²

Notes for Table 2.2:

1. 60% represents the average recycled content for the U. S. steel industry. Use of U. S. manufactured steel will meet this requirement.
2. As per EPA Comprehensive Guideline for Procurement of Products Containing Recovered Materials (60 FR 21370, effective May 1, 1996).

PART 3 - EXECUTION

3.1 GENERAL:

- A. Submit to the Architect for review and approval product data such as MSDS and environmental impact data prior to ordering project materials.
- B. Prepare and maintain a Materials Log, providing information on content of materials, where specific materials are to be used, MSDS, and environmental specifications of the material. Maintain the log book weekly as materials are ordered.

3.2 FIELD QUALITY CONTROL:

- A. The Owner reserves the right to take samples and perform, at random, tests of approved materials delivered to the job site to verify compliance of actual materials with specifications.

END OF SECTION

SECTION 01 81 22

**INDOOR AIR QUALITY MANAGEMENT
DURING CONSTRUCTION**

PART 1- GENERAL

1.01 SUMMARY

- A. IAQ Management during Construction
 - 1. Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:
 - a. During construction meet or exceed the recommended Control Measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, latest edition, Chapter 3.
 - b. Protect stored on-site or installed absorptive materials from moisture damage.
 - c. Replace all filtration media immediately prior to occupancy with MERV 8 filters or higher.

1.02 OVERVIEW

- A. The intent of this IAQ Plan is to:
 - 1. Minimize exposure of construction workers to air pollutants;
 - 2. Prevent air pollutants from collecting in building systems and on building materials; and
 - 3. Prevent air pollutants caused by construction from migrating into occupied spaces.
- B. For the purposes of this plan, air pollutants are defined as: Particulates, Volatile organic compounds, Formaldehyde, Combustion emissions, Airborne bacteria and micro-organisms and Airborne inorganic compounds, such as ozone (from electric motors), metal fumes (from smoldering and welding), and ammonia and chlorine (from cleaning products).

PART 2- PRODUCTS

Not used

PART 3-EXECUTION

3.01 HVAC EQUIPMENT AND DUCT WORK

- A. HVAC equipment and ductwork will be protected from dust and other pollutants via the following procedures:
 - 1. Sealing Ductwork and Air Handling Equipment
 - a. Openings into installed or existing ductwork and air-handling equipment not in active use will be sealed using taped plastic, taped cardboard, or other reasonably air-tight coverings. Sealing will occur prior to, or immediately upon installation of the new ductwork or equipment. Regular walk-throughs will be conducted by the Contractor to check for damaged or displaced coverings. Repair or replacement of damaged or displaced coverings will occur immediately upon discovery, at the direction of the Contractor.
 - b. Construction work that generates air pollution will be avoided where ductwork or

- air handling equipment is being installed. If visible air pollutants are present in a space where ductwork is to be installed, spot cleaning or other measures will be used to prevent ductwork or equipment contamination.
2. Use of Mechanical Systems during Construction
 - a. Exhaust and makeup air supply systems:
When a system is operated during construction, its filters will be replaced upon completion of construction with MERV 13 filters.
 - b. Air handling systems will be subject to these provisions when operated during construction:
 1. The AHU will be protected with a temporary filter having a minimum rating of MERV 8, per ASHRAE 52.2.
 2. Distribution elements needing filters, including all return air ductwork, will be protected with temporary filters having a minimum rating of MERV 8 per ASHRAE 52.2 unless otherwise noted below.
 - c. All components of the distribution on the return side will be protected, including but not limited to:
 1. The portion of the air handler upstream of the central fan;
 2. Return vents, ducts and shafts;
 3. VAV box intakes; and
 4. Transfer ducts.
 - d. Components of the distribution system on the supply side will typically not need protection except if portions of the supply system become contaminated, coarse filters will be applied to completely cover supply outlets, to prevent the distribution of particulates into building spaces.
 3. Filter Replacement and Tracking
 - a. MERV 8 filters used for ductwork protection will be replaced on an as-needed basis, as determined by the Contractor.
 - b. Upon completion, the MERV 8 filters used for ductwork protection will be discarded. New filters will be installed at all air handlers.

3.02 TEMPORARY LOCAL EXHAUST

- A. Where available, operable vents and windows will be opened to ventilate the building during application of interior finishes when weather conditions are suitable. Spaces with fixed glazing or no windows will be ventilated by localized temporary exhaust, as described below, or by using building mechanical systems (described above).
 1. Local temporary exhaust will be accomplished using fans, duct extensions, and filters.
 2. Local temporary exhaust will not discharge near air intakes or other openings that lead into the building.

3.03 COVERING OR SEALING SOURCES OF POLLUTION

- A. The following are rules that apply to materials that emit air pollution or odors:
 1. Containers containing wet materials will be covered whenever they are not in active use.
 2. Waste materials will be covered or sealed and regularly removed from the building.
 3. Absorptive materials or materials with an odor will be covered while moved through the building.
 4. Whenever possible, material containers will be disposed of with the covers on.
 5. Materials that require a surface coating to control pollutants or odors will be coated promptly.

3.04 CONTROLLING POLLUTION AT ENTRANCES

- A. Measures will be taken to prevent pollutants from being tracked into interior spaces by workers or equipment. These will include temporary walk-off mats and floor protection.

3.05 PROTECTION OF STORED MATERIALS

- A. Measures will be taken to minimize dust accumulation on material surfaces and the absorption of other pollutants by absorbent materials. The measures will include the following:
 1. Materials will be handled and stored according to the manufacturer's recommendations.
 2. Unwrapped absorbent materials will be shrink-wrapped if necessary.
 3. Highly absorbent materials like duct liner, acoustic tile, carpeting, or insulation will be stored indoors in the original packaging, or covered and sealed.
 4. Moderately porous materials like gypsum board will be stored indoors, wrapped or away from dust and materials prone to off-gas VOC's.
 5. Framing lumber will be stored indoors whenever possible. If stored outdoors, the lumber will be covered with a water proof covering, stored off the ground, and located away from standing water.
 6. Dense material like glass, metal framing, ductwork and equipment will be covered and kept dry.
 7. If condensation forms on cold material, care will be taken not to expose it to dust or other particles. If exposed to pollution, housekeeping measures will be used promptly to clean the material before installation.

3.06 PREVENTING CONTAMINATION OF COMPLETED AREAS FROM WORK UNDER CONSTRUCTION

- A. When work is completed in an area, the area will be protected from pollutants generated in other parts of the building still under construction. One or more of the following methods of pathway interruption will be used:
 1. Erecting barriers between completed areas and areas still under construction
 2. Where present, doors and windows will be closed and locked between completed portions of the building and portions of the building still under construction.

3.07 HOUSEKEEPING

- A. The following housekeeping measures will be employed throughout construction:
 1. A regular housekeeping schedule will be instituted. Cleaning measures and frequency will be selected according to the pollutants generated in a space.
 2. Low-odor cleaning agents will be used.
 3. Spills of water or solvent will be cleaned up immediately.
 4. Attention will be given to cleaning hidden or hard-to-reach surfaces, such as wall cavities, tops of door, ledges, and behind water closets.

3.08 SCHEDULING

- A. Construction activities shall be scheduled such that construction and occupancy do not overlap in time. Provide adequate time for carpet, paint and other finishes time to off-gas prior to occupancy.

END OF SECTION

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SECTION 01 81 30

NE-CHPS DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes special project administrative and procedure requirements related to the State of Rhode Island program for energy conservation and efficiency, indoor air quality, and natural resource efficiency which are in compliance with the Northeast High Performance Green Schools Guidelines: Criteria, (referred to herein as "CHPS, or NECHPS"). The Owner has established minimum CHPS credit points to achieve which will provide the Owner with a reimbursement funding grant necessary for completion of this Project. The General Contractor and subcontractors shall, as part of the Contract with the Owner, comply with requirements of CHPS in the performance of the Work. The General Contractor, at a minimum, shall implement the following:
 - 1. The General Contractor shall designate a "Contractor's CHPS Representative" who will assist the Owner and Architect with fulfilling documentation and submittals which are required by CHPS.
 - 2. Provide products that minimize consumption of non-renewable resources, consume reduced amounts of energy and minimize amounts of pollution to produce and employ recycled and/or recyclable materials.
 - 3. Provide verification that materials used have been reviewed for environmental considerations as specified.
 - 4. Maintain a materials log.
 - 5. Conduct special meetings.
 - 6. Provide building commissioning plan in conjunction with General Commissioning Specification.
 - 7. Control environmental air quality pollutants by controlled selection of materials and processes used in project construction in order to attain acceptable indoor air quality as specified.
- B. Contractor shall follow specified compliance requirements in conjunction with environmental quality requirements specified in other individual specification sections. Notify Owner and Architect if conflicts arise between performance of the work and environmental goals. This specification is not intended to limit alternative means of achieving these goals. Suggestions and input from the General Contractor and subcontractors

for implementing these goals are encouraged.

1.3 RELATED SECTIONS

- A. Section 01 60 00 - SUBSTITUTION PROCEDURES.
- B. Section 01 31 00 - PROJECT COORDINATION:
 - 1. Preconstruction, progress and special project meeting requirements regarding CHPS Certification.
- C. Section 01 33 00 - SUBMITTAL PROCEDURES:
 - 1. CHPS Certification Report
 - 2. Environmental product certifications.
- D. Section 01 60 00 - PRODUCT REQUIREMENTS.
- E. Section 01 74 19 - WASTE MATERIALS MANAGEMENT AND RECYCLING.
- F. Section 01 78 00 - CLOSEOUT SUBMITTALS.
- G. Individual Specification Sections: Submittal, performance and material requirements related to CHPS criteria submissions.

1.4 DEFINITIONS

- A. The term "CHPS" as used herein and throughout the Project Manual refers to the Northeast High Performance Green Schools Guidelines: Criteria, Version 4.0.
- B. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles from the project location. Manufacturing refers to the final assembly of components into the building product that is installed at the project site.
- C. Regionally Extracted, Harvested, or Recovered Materials: Materials that are extracted, harvested, or recovered and manufactured within a radius of 500 miles from the project site.
- D. Recycled Content: The percentage of weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (preconsumer), or after consumer use (post-consumer).
 - 1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production or the same product are not recycled materials.
 - 2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

1.5 CONTRACTOR'S CHPS REPRESENTATIVE

- A. The General Contractor shall designate a CHPS Representative, acceptable to the Owner, experienced in construction management and waste-recycling documentation. The Contractor's CHPS Representative is responsible for implementation, coordination, and documentation of specified CHPS Credit Requirements.

- B. The Contractor's CHPS Representative is responsible for overseeing the Owner's environmental goals for this project during construction.
- C. The Contractor's CHPS Representative shall attend all Environmental Quality Review Meetings, Project Progress Meetings (at least monthly), Pre-installation Meetings, and Special Meetings regarding environmental issues throughout the term of construction.
- D. Prior to the start of on-site Work, the Contractor's CHPS Representative shall distribute copies of the CHPS certification requirements and credit goals to the Construction Project Team (Project Manager and Project Superintendent), and each applicator, installer, and supplier involved with the Project.
 - 1. Copies of the distribution list shall be furnished to the Owner's Project Representative and the Architect. Update distribution list as additional applicators, installers, and suppliers are contracted, re-issue as distribution list is revised.

1.6 CHPS CERTIFICATION PLAN

- A. Submit to Architect a written plan for achieving the specified CHPS Credit Certification requirements within 14 calendar days of Notice to Proceed. Plan shall include a written narrative describing proposed procedures to be implemented.
- B. Contractor shall submit to Architect two copies of a CHPS Certification Progress Report each month throughout the work. Include a written narrative describing progress to date.

1.7 GENERAL CHPS CREDIT REQUIREMENTS

- A. Contractor shall submit CHPS certification documentation demonstrating compliance with the corresponding CHPS Credit Requirements. Submit CHPS documentation under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES.
 - 1. The following is an overview schedule of Credit Requirements for which the Contractors shall contribute to CHPS certification. The schedule is provided as a guide and does not supersede CHPS Certification requirements specified in individual Specification Sections.
 - 2. Submission of CHPS documentation is separate and additional to, progress schedules, product literature submittals, samples, mock-ups, commissioning and all other project related submittals required under other Division One Specification Sections and individual Specification Sections.
- B. The CHPS Credit Requirements for CHPS compliance are in addition to environmental quality requirements specified elsewhere in the Specifications.

1.8 SUBMITTAL SCHEDULE FOR CHPS CREDIT REQUIREMENTS

- A. General: Owner's goal CHPS prerequisites and credit points are included in a checklist that will be attached to a forthcoming Addendum. Additional requirements are specified in individual Specification Sections.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.02 SECTION INCLUDES

- A. All material, labor and equipment required for demolition and removal of existing structures and items as shown on the drawings and as may be required to permit the proper installation of any new work.

1.03 QUALITY ASSURANCE

- A. Perform work in accordance with all applicable local and state Codes.

1.04 SEQUENCING

- A. Coordinate with the occupancy of the owner under provisions of Section 01 10 00.
- B. Avoid interference with the use of and passage to and from adjacent buildings and facilities.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 PREPARATION

- A. Inspection
 - 1. The contractor shall inspect the entire site, premises and all objects designated to be removed and those to be preserved.
 - 2. Locate all existing utility lines and determine the requirements for their protection or abandonment.
- B. Notification
 - 1. Notify the owner at least two full working days prior to commencing the work of this section.

C. Verification

1. Prior to commencing the work of this section, verify with the owner and the Architect all objects to be removed and all objects to be preserved.

D. Protection

1. Protect all objects and utilities designated to remain as required. Active utilities shall not be interrupted.
2. Provide shoring and bracing for the support of existing structures, that are to remain in place, where necessary to prevent collapse of structures.
3. Dust control shall be as necessary to prevent the spread of dust and flying particles during performance of the work of this section. Provide taped fire resistant polyethylene dust barriers as required. Thoroughly moisten all surfaces as required. Protect HVAC systems from absorbing excessive amounts of contaminants.
4. The contractor shall be responsible to repair or replace all items designated to remain that are damaged due the surrounding demolition.

3.02 CLEANING

- A. Clean work under provisions of Section 01 70 00.
- B. Remove all debris and trash from the site on a daily basis and dispose of in accordance with all local and state Codes.
- C. All removed items scheduled to be retained shall be given to the owner for their use.
- D. Burning at the site will not be permitted.

3.03 SCHEDULE

A. Site Work

1. Remove all concrete walks indicated on the drawings or as required by new construction.
2. Sawcut pavement where existing pavement is to butt against new pavement.
3. Assume that all concrete work is reinforced. Cut or burn reinforcing flush with concrete scheduled to remain.

B. Finishes

1. Remove all existing floor finishes, base materials and adhesives in all areas scheduled to receive new finishes unless instructed otherwise. Patch and repair all substrate damaged by removal as required to install new finish.
2. Remove all finishes as indicated on the drawings and as required by new construction. Repair or replace substrate damaged by removals.

C. Gypsum Board Partitions

1. Remove partitions, blocking, and associated framing indicated to be removed on the drawings and as required by new construction.
2. Remove all appurtenances, equipment and fixtures from partitions to be demolished.
3. Remove all nails, screws and other fastening hardware associated with partitions to be demolished.
4. Remove all doors, windows and frames within partition to be demolished.

D. Concrete

1. Assume all concrete is reinforced.
2. Use a saw cut on all concrete to be removed that butts concrete to remain
3. Always remove concrete in small sections
4. Provide core boring through concrete floors and roofs as required to install new utilities.
5. Remove all concrete slabs, walls or foundations as indicated on the drawings.

E. Masonry

1. Assume all masonry is reinforced.
2. Remove all masonry as indicated on the drawings and as required by new construction
3. All new openings in existing walls will be saw cut.
4. Saw cut masonry walls as required to install new flashing as indicated on the drawings.
5. Remove reinforcing flush with surfaces scheduled to remain.
6. Remove steel lintels within walls to be demolished.
7. Provide core boring through masonry walls as required to install new utilities.
8. Remove all appurtenances, equipment and fixtures from masonry partitions to be demolished.

F. Doors, Windows and Louvers

1. Remove all doors, frames, hardware, fasteners, sub frame material and anchors from openings indicated on the plans or as required by new construction.
2. Remove window, sub frame materials, and other related items indicated on the plans or as required by new construction.
3. Remove louvers, grills, and vents, including anchors and sub frame materials where indicated or as required by new construction.
4. Modify existing openings for new construction as indicated on plans.
5. Provide new lintels as required by new construction.

G. Mechanical, Electrical and Plumbing.

1. Refer to the mechanical, electrical, and plumbing drawings and specifications for equipment removal requirements.
2. Provide cutting of holes in floors, partitions or ceilings for all mechanical, electrical, and plumbing as required.
3. Remove all mechanical, electrical, and plumbing equipment and fixtures from partitions to be demolished.

4. Remove all existing fixtures and equipment in areas scheduled to receive new fixtures and equipment unless instructed otherwise.
Patch and repair all substrate and finishes damaged by removal of items as required to match existing or to prepare for a new finish as scheduled. Dispose of all removed fixtures and equipment unless noted otherwise.

END OF SECTION

SECTION 0301 30

FLOOR PATCH AND SKIMCOAT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provision and installation of floor patch and skimcoat in all areas where necessary under new flooring and at demolished existing partitions to create a level subfloor in accordance with these specifications.

1.02 PERFORMANCE REQUIREMENTS

- A. ASTM C-109 - Compressive strength = more than 4000 PSI after 28 days.
- B. VOC: 0 g/L, calculated SCAQMD 1168

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 0133 00.
- B. Shop Drawings: Plans indicating substrates, and locations.

1.04 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum 5 years of experience.
- B. Installer: Company specializing in performing the work of this section with minimum five years documented experience.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 0160 00.

1.06 SAFETY PRECAUTIONS

- A. Follow all safety precautions by the manufacturer and required all Federal, State and Local Codes.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not install material in interior air temperature below 50 degrees. This temperature must be maintained two days prior and two days after installation.
- B. Comply with manufacturer's written instructions for substrate temperature, ambient temperature and humidity, ventilation, and other conditions affecting underlayment performance.

1.08 COORDINATION

- A. Verify that the floor patch and skimcoat material specified in this section is compatible with the existing substrate it is covering and the floor finish that will be installed to its surface.
- B. If any inconsistencies exist, inform the Architect prior to installation.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Ardex Engineered Cements
ARDEX GPS™ General Patch & Skimcoat
- B. Substitutions: Under provisions of Section 0160 00.

2.02 MATERIALS

- A. The material is a trowelable patch and skim coat for use over interior concrete and wood subfloors.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify the existing substrate is in satisfactory condition and properly cleaned to meet the manufacturer's recommendations.

3.02 INSTALLATION

- A. Install the floor patch and skimcoat material in accordance with the manufacturer's requirements, instructions and recommendations.
- B. Cure according to manufacturer's written instructions. Prevent contamination during application and curing processes.
- C. Do not install floor coverings over floor patch and skimcoat material until after time period recommended in writing by manufacturer.
- D. Remove and replace areas of floor patch and skimcoat material that show evidence of lack of bond with substrate, including areas that emit a "hollow" sound when tapped.
- E. Install under all areas receiving new vinyl tile and carpet tile flooring as required to provide a level subfloor meeting the minimum requirements of the flooring manufacturer. See drawings for locations.

3.03 CLEANING

- A. Clean work under provisions of Section 0170 00.

END OF SECTION

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SECTION 03 31 00

CONCRETE CONSTRUCTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description for the complete installation of standard concrete construction.

1.02 REFERENCES

- A. ASTM C150 - Specification for Portland Cement
- B. ASTM C33 - Specification for concrete aggregates
- C. ASTM A-15 - Standard metal reinforcement
- D. ASTM A-305 - Minimum requirements for the deformation of deformed steel bars for concrete reinforcement
- E. ASTM A-185 - Standard specifications for welded steel wire fabric for concrete reinforcement.
- F. ASTM C-192 - Method of making and curing concrete compression and flexure test specimens in the laboratory.
- G. ASTM C-31 - Method of making and curing concrete compression and flexure test specimens in the field.
- H. ASTM C-39 - Test for compressive strength of cylindrical strength of cylindrical concrete specimens.
- I. ASTM C-143 - Test for slump of Portland Cement Concrete
- J. ASTM C-42 - Method of obtaining and testing drilled cores and sawed beams of concrete
- K. ASTM C-94 - Standard Specifications for Ready-Mix concrete.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Test reports shall be submitted for approval and the results distributed as follows: Copy to field office, 1 copy to contractor's office and 4 copies to Architect's office
- C. Shop drawings shall indicate dimensions, bar schedules, bending details and placing diagrams and details for all reinforcement.
- D. Design data shall be by the architect 30 days prior to commencing any concrete operations.

- E. Record documents regarding concrete pours shall be kept by the contractor and submitted to the Architect, upon request including the following data: date of pour, starting time, mean temperature, total yardage pour location, time of finish and curing duration.

1.04 QUALITY ASSURANCE

- A. Concrete Quality: When there is any question as to the quality of the concrete of the structure, the Architect may require the Contractor, at the Contractor's expense, to have tests made in an approved independent testing and inspection laboratory. Such tests shall be in accordance with ASTM C-42 or Section 201 and 202 of the current A.C.I. Building code for Reinforced Concrete (A.C.I. 318) as may be required. The criteria for acceptability of the concrete under the latter shall be that given therein. If tested concrete is below contract requirements, the Architect may condemn such concrete already installed. Remove such condemned concrete and replace with new concrete that meets the proper criteria.

1.05 QUALIFICATIONS

- A. All companies involved in performing the work of this section shall have documented experience specializing in such work for a minimum of five years.

1.06 REGULATORY REQUIREMENTS

- A. All concrete construction shall meet state and local code requirements.

1.07 MEASUREMENT OF MATERIALS

- A. Measurement shall be by weight by weighing devices accurate within 1% except that water may be measured by either weight or volume and the water measuring device shall be controllable to one-half of one percent.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Cement: Cement shall be Portland cement Type 1, conforming to ASTM Specification C-150. Type III High Early Cement shall be used between December 1st and April 1st.
- B. Only one brand of cement shall be used for all structural concrete to be left exposed, so that even coloring is assured for all such surfaces.
- C. Fine Aggregate: Sand for concrete work shall conform to ASTM Specification C-33, and shall be composed of clean, hard, durable, uncoated grains free from silt, loam and clay.
- D. Coarse Aggregate: Coarse aggregate shall be gravel or crushed stone conforming to ASTM Specification C-33 and shall be composed of clean, hard, durable, uncoated grains of strong material. Maximum size of aggregate shall be 1 inch.
- E. Water: Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, organic materials, or other deleterious substances.

- F. Metal Reinforcement: Reinforcing bars shall conform to (ASTM Designation: A 615/A 615M, Grade 60, deformed).
- G. Wire Fabric: Welded wire fabric for concrete reinforcement shall conform to ASTM Designation A-185.
- H. Metal Accessories: Include all spacers, chairs, ties and other devices necessary for properly placing, spacing, supporting and fastening reinforcement in place.
- I. Floor Hardener: Floor Hardener in all areas where floor finish is exposed concrete, not otherwise covered or given floor coating shall be Lapidolith as manufactured by L. Sonneborn Sons, Inc., Flintox Liquid manufactured by Toch Bros., Inc., Hornolith manufactured by A.C. Horn Products of Dewey and Almy Chemical Division, W.R. Grace & Co., or Agatex manufactured by Devoe-Truscon. Number of coats and application procedure shall be in strict accordance with applicable manufacturers specification.
- J. Inserts: Inserts shall be either adjustable, threaded or wedge types depending on use as manufactured by Hohmann & Barnard, Inc., 205 East 53rd Street, New York, New York.
- K. Admixtures: The use of any admixtures other than those which may be specified, shall be used only when and as approved in writing by the Architect. Anti-freeze admixtures shall not be used. All exposed concrete shall have Pozzo-lith additive and Dorex air entraining additive.

2.02 MIXES

- A. Concrete details, plain or reinforced to conform to the current provisions of the A.C.I. Code. Design and strength of concrete 3000 lbs. per sq. inch at 28 days; minimum cement content 6 bags per cu. yd. of concrete and not more than 6-1/2 gallons of water per bag of cement shall be used to maintain proper strength, workability and consistency. Maximum slump shall be 5" however, exposed concrete shall have a maximum slump of 4" plus or minus 2".
- B. Design of Mixes: The testing laboratory, selected by the Architect shall prepare the designs of mixes for the strength of concrete specified to be used. For trial mixes, use identical proportions of cement and aggregate that will be used for job mix. Tests shall be in accordance with ASTM C-192 and C-39. Laboratory trial mix shall develop concrete comprehensive strength 15% higher than required minimum. Prepare mix design for each type of cement.

2.03 MIXING OF CONCRETE:

- A. Equipment: The mixing equipment shall be capable of combining the aggregates, cement and water within the specified time into a thoroughly mixed and uniform mass and of discharging the mixture without separation.
- B. Truck Mixing: Truck mixers shall be of the revolving drum type, watertight, and so constructed that the concrete can be mixed to insure a uniform distribution of materials. All solid materials for the concrete shall be accurately measured in accordance with section on measuring and charged into the drum at the proportioning plant. The truck mixer shall be equipped with a tank for carrying water, and the tank equipped with a device by which the quantity of water added can be readily verified. Only the predetermined amount of water shall be added to the dry mixture at the site. Truck mixing shall be continued for not less than fifty revolutions after all ingredients,

including the water, are in the drum and shall not continue for more than ten minutes before being used.

- C. Ready-mixed concrete shall be mixed and delivered in accordance with ASTM Designation C-94.
- D. Hand Mixing: When hand mixing is authorized, it shall be done on a watertight platform and in such a manner as to insure a uniform distribution of the materials throughout the mass. Mixing shall be continued until a homogeneous mixture of the required consistency is obtained.
- E. Retempering: The retempering of concrete or mortar which has partially hardened will not be permitted.

2.04 QUALITY CONTROL

- A. Concrete Tests: Tests of concrete shall be made by the testing laboratory. Not less than one test, or as may be directed by the Architect, for each 100 cu. yd. of concrete for each strength of concrete placed will be required with a minimum of one test for each day's pour. Not less than four specimens will be made and stored by the Contractor for each test. All specimen shall be cured and tested by the Laboratory. Specimen shall be made and tested in accordance with current ASTM Specifications C-39 and C-31. Slump tests shall be made on each batch tested in accordance with current ASTM Specification C-143.
- B. Each test shall consist of four specimens of which one cylinder shall be tested after 7 days; two cylinders shall be tested after 28 days; fourth cylinder shall be tested at 45 days only when 28 day tests are below specified strength. In all cases where strength of specimen falls below required minimum ultimate compressive strength, the Architect shall have the right to make whatever changes are necessary to secure the required strength.

2.05 CEMENT FINISHES:

- A. Concrete Floor Slab Finishes: Finished floor slab surfaces shall be true plane surfaces with a tolerance of 1/8" in 10' unless otherwise indicated. Surfaces shall be pitched to drains. The dusting of finished surfaces with dry materials will not be permitted.
- B. Monolithic Finish: Floor slabs shall be finished by tamping the concrete with special tools to force the coarse aggregate away from the surface then screeding and floating with straight edges to bring the surface to the required finish level. While the concrete is still green but sufficiently hardened to bear a man's weight without deep imprint, it shall be wood-floated to a true, even plane with no coarse aggregate visible. Sufficient pressure shall be used on the wood float to bring moisture to the surface. After surface moisture has disappeared, surfaces shall be steel-troweled to a smooth, even, impervious finish free from trowel marks.
- E. Steel-Trowel Finish: shall be provided for floor slabs in rooms and spaces to have exposed concrete floor finish and floor slabs that are to receive vinyl tile floor finishes and where thin set quarry tile floors are indicated.

PART 3 - EXECUTION

3.03 PLACING OF CONCRETE:

- A. Concrete shall be handled from the mixer and in the case of truck-mixed concrete, from the transporting vehicles to the place of final deposit as rapidly as practicable by methods which shall prevent the separation or loss of the ingredients. Under no circumstances shall concrete that has partly hardened be deposited in the work.
- B. Forms for walls or thin section of considerable height shall be provided with opening or other devices that will permit the placing of concrete without segregation. Concrete, during and immediately after deposit, shall be thoroughly compacted by spading, rodding, or by mechanical vibration.
- C. Concrete shall be deposited continuously or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause a formation of seams and planes of weakness within the section. If a section cannot be placed continuously, construction joints may be located at points as provided for in the drawings, or approved by the Architect. Do not secure vibrator, to forms or reinforcement, operate in place not less than fifteen (15) seconds and of sufficient duration to produce concrete of uniform and maximum density with even distributing of ingredients and complete embedment of reinforcement. 1-1/2" head vibrators shall be provided for wall and column pours.
- D. Approved external mechanical vibrating equipment applied lightly to exterior studs and walls when such vibration is necessary to secure surfaces that are even, dense, free from aggregate pockets and honeycomb. Vibration shall be carried on continuously with the placing of concrete. Vibration shall not be used in partly set concrete.
- E. No concrete to be placed when temperatures are below 32 degrees F.
- F. Concrete shall not be deposited during rains unless adequately protected, and in any case shall be protected from rain until it has hardened sufficiently to resist the formation of seams and planes of weakness within the section. The top surface shall be generally level.

3.05 CURING AND PROTECTION:

- A. Protect all concrete work against injury from elements and defacement of any nature during construction operations, which included protection of mechanical rooms with plywood prior and during mechanical installation.
- B. When the temperature is below 30 degrees F., or is likely to fall below 35 degrees F., adequate equipment shall be provided for heating the concrete materials and maintaining the concrete at not less than 50 degrees F. for at least 72 hours for Type I, or for as much time as is necessary to insure proper rate of curing of the concrete. Temperature of the separate materials, including the mixing water, when placed in the mixer, shall not exceed 140 degrees F. When placed in forms, the concrete shall have a temperature between 60 degrees F., and 90 degrees F. The use of salts, chemicals to prevent freezing or accelerating agents shall not be permitted.

- C. Keep exposed surfaces of concrete moist for a period of at least seven (7) days after being placed. Protect all concrete except slabs on ground, placed during hot weather, from rays of sun and air currents, cover with two layers of wet burlap and keep wet for seven (7) days.
- D. Keep concrete, except slabs, as moist as practicable during curing period in temperatures below 40 degrees F.
- E. Curing of slabs shall be done by spraying Demicoin Cure-Hard in accordance with manufacturer's directions.

3.07 FLOOR SLABS:

- A. Slabs on Grade: concrete base slabs shall be installed over 8 inch bank run gravel fill and shall be reinforced with wire mesh lapped 6". Prior to starting the floor work, verify completion of all piping and any mechanical equipment occurring below the floor level. Electrical conduit, if occurring, shall be installed prior to installation of wire mesh.
- B. Provide depressions in slabs required to receive various floor finishes.
- C. Concrete shall be firmly tamped and the surface of slabs to be screeded and floated true and level, (the mixing water content in the concrete to be kept uniform to avoid slump irregularity in the slab surfaces). Pipe screeds shall be installed in ground or on forms, wet screeds prohibited.
- D. Slab surfaces shall be finished and steel troweled to receive specified finished floor material directly. Floor showing trowel marks, swirls, depressions, etc. will be rejected. All exposed slabs shall not have any deviations exceeding 1/8" in 16'. Finish shall have a hard surface without air pockets or other defects. In the event that finishing workmanship is deemed inadequate by the Architect, the contractor shall modify his methods to improve the resulting finish.
- E. Floor slabs to be poured before interior partitions are erected.
- F. Perimeter Filler: Cleavage joints between vertical concrete or other surfaces and floor slabs on grade shall be 1/2" wide and shall extend the full depth of slab. The joints shall be filled with premoulded expansion joint filler to within 1/2" of top of slab. The top of the joint shall be filled with an approved joint sealer.
- G. INTEGRAL DAMPPROOFING: The contractor shall use in slabs on grade "Anti-Hydro" dampproofing or an approved equal integral dampproofing done in strict accordance with manufacturer's printed instructions.

3.09 ANCHOR BOLTS: The structural steel contractor will furnish an approved anchor bolt location plan. General Contractor shall set anchor bolts and be responsible for position and height of bolt projection. Modification to steel due to incorrect position of anchor bolts will be borne by the General Contractor.

3.10 CONCRETE FLOOR SLAB INFILL:

- A. Following cutting and removing existing concrete floor slab and installation of under-slab utilities provide and install new reinforced concrete infill as follows.
- B. See drawings for location of concrete floor slab infill.

- C. Concrete infill is to be 4" thick of 4000 psi concrete on an 8 inch thick compacted gravel base course. (Unless thicknesses of concrete and base are noted otherwise on the drawings)
- D. Provide reinforcing of w.w.f. 6x6 – w4 x w4 with a 2 inch minimum cover.
- E. Provide new 15 mil vapor barrier above new gravel base.
- F. Pin new concrete infill to existing concrete floor slab using 5/8" diameter 12 inch long steel rods inserted into existing core-drilled slab minimum of 6 inches. Install maximum of 2 feet o.c. around perimeter of infilled area.
- G. Surface of new concrete infill to match level with existing surrounding concrete slab.
- H. New slab surface is to be finished and steel troweled to match finish of surrounding concrete slab or as required to accept new floor finish.
Floor showing trowel marks, swirls, depressions, etc. will be rejected.
All exposed slabs shall not have any deviations exceeding 1/8" in 10'.
Finish shall have a hard surface without air pockets or other defects.
In the event that finishing workmanship is deemed inadequate by the Architect, the contractor shall modify his methods to improve the resulting finish.

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SECTION 04 22 24

REINFORCED MASONRY

(NON-LOAD BEARING INTERIOR PARTITIONS)

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 unit masonry assemblies consisting of the following:
 - 1. Concrete masonry units. (To be incorporated in non-load bearing interior partitions)
 - 2. Mortar and grout.
 - 3. Reinforcing steel.
 - 4. Masonry joint reinforcement.
 - 5. Ties and anchors.
 - 6. Miscellaneous masonry accessories.
- B. Products furnished, but not installed, under this Section include the following:
 - 1. Adjustable masonry anchors welded to structural steel frame.
- C. Products installed, but not furnished, under this Section include the following:
 - 1. Steel lintels for unit masonry.
 - 2. Steel door frame anchors.

1.03 RELATED SECTIONS

- A. Related Sections include the following:
 - 1. Section 03 31 00 – Concrete Construction

1.04 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following net-area compressive strengths (f'm) at 28 days. Determine compressive strength of masonry by testing masonry prisms according to ASTM C 1314.
 - 1. For Concrete Unit Masonry: $f'm = 1500$ psi.
- B. Masonry Grout: 3000 psi compressive strength at 28 days.

1.05 SUBMITTALS

- A. Comply with provisions of Section 01 33 00.
- B. Product Data: For each different masonry unit, accessory, and other manufactured product specified.
- C. Shop Drawings: Show fabrication and installation details for the following:
 - 1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
- D. Samples for Verification: For the following:
 - 1. Full-size units for each different exposed masonry unit required, showing the full range of exposed colors, textures, and dimensions to be expected in the completed construction.
 - 2. Colored mortar: Samples for each color required, showing the full range of colors expected in the finished construction. Make samples using the same sand and mortar ingredients to be used on Project. Label Samples to indicate types and amounts of pigments used.
 - 3. Accessories embedded in the masonry.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

- F. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
 - 1. Each type of masonry unit required.
 - a. Include size-variation data for cmu, verifying that actual range of sizes falls within specified tolerances.
 - b. Include test results, measurements, and calculations establishing net-area compressive strength of masonry units.
 - 2. Mortar complying with property requirements of ASTM C 270.
 - 3. Grout mixes complying with compressive strength requirements of ASTM C 476. Include description of type and proportions of grout ingredients.
- G. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Each type of masonry unit required.
 - a. Include size-variation data for cmu, verifying that actual range of sizes falls within specified tolerances.
 - b. Include test data, measurements, and calculations establishing net-area compressive strength of masonry units.
 - 2. Each cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.
 - 3. Each combination of masonry unit type and mortar type. Include statement of net-area compressive strength of masonry units, mortar type, and net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
 - 4. Each material and grade indicated for reinforcing bars.
 - 5. Each type and size of joint reinforcement.
 - 6. Each type and size of anchor, tie, and metal accessory.

1.06 QUALITY ASSURANCE

- A. Comply with provisions of Section 01 45 00.
- B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1093 to conduct the testing indicated, as documented according to ASTM E 548.
- C. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
- D. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.
- E. Preconstruction Testing Service: Engage a qualified independent testing agency to perform the following preconstruction testing:
 - 1. Concrete Masonry Unit Test: For each concrete masonry unit indicated, per ASTM C 140.
 - 2. Prism Test: For each type of wall construction indicated, per ASTM C 1314.
 - 3. Mortar Test: For mortar properties per ASTM C 270.
 - 4. Grout Test: For compressive strength per ASTM C 1019.
- F. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 60 00.

- B. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
 - 1. Protect Type I concrete masonry units from moisture absorption so that, at the time of installation, the moisture content is not more than the maximum allowed at the time of delivery.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- E. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- F. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.08 PROJECT CONDITIONS

- A. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect sills, ledges, and projections from mortar droppings.
 - 2. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
- B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- C. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required. Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. When ambient temperature exceeds 100 deg F, or 90 deg F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.

1.09 REFERENCE STANDARDS

- A. ACI 530/ASCE 5/TMS 402: Building Code Requirements for Masonry Structures
- B. ACI 530.1/ASCE 6/TMS 602: Specification for Masonry Structures
- C. ASTM A82: Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
- D. ASTM C90: Standard Specification for Load bearing Concrete Masonry Units
- E. ASTM C144: Standard Specification for Aggregate for Masonry Mortar
- F. ASTM C150: Standard Specification for Portland Cement
- G. ASTM C207: Standard Specification for Hydrated Lime for Masonry Purposes
- H. ASTM C270: Standard Specification for Mortar for Unit Masonry
- I. ASTM C404: Standard Specification for Aggregates for Masonry Grout
- J. ASTM C476: Standard Specification for Grout for Masonry
- K. ASTM C780: Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
- L. ASTM C1019: Standard Test Method for Sampling and Testing Grout
- M. ASTM C1314: Standard Test Method for Compressive Strength of Masonry Prisms

- N. AWS D1.4: American Welding Society Structural Welding Code – Reinforcing Steel

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. General: Provide shapes indicated and as follows:
1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
 2. Provide bullnose units for outside corners, unless otherwise indicated.
- B. Concrete Masonry Units (Decorative and Standard): ASTM C 90
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 2. Weight Classification: Normal weight, unless otherwise indicated.
 3. Provide Type I, moisture-controlled units.
- C. Color
1. Exposed concrete block to be painted as specified in Section 09 91 00 – Painting. Color to be selected by Architect from manufacturer's standard colors.
- D. Finish
1. Exposed faces are to be smooth faced.

2.02 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207.
- D. Mortar Cement: ASTM C 1329.
- E. Masonry Cement: ASTM C 91.
- F. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
- G. Aggregate for Grout: ASTM C 404.
- H. Water: Potable.

2.03 REINFORCING STEEL

- A. Comply with reinforcing requirements in Section 03 31 00, Cast-in-Place Concrete.
- B. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M; Grade 60.
- C. Epoxy-Coated Reinforcing Steel: ASTM A 615/A 615M, Grade 60; epoxy coated to comply with ASTM A 775/A 775M.

2.04 MASONRY JOINT REINFORCEMENT

- A. General: ASTM A 951 and as follows:
1. Hot-dip galvanized, carbon-steel wire.
 2. Wire Size for Side Rods: W2.8 or 0.188-inch diameter.
 3. Wire Size for Cross Rods: W2.8 or 0.188-inch diameter.
 4. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units where indicated.
- B. For single-wythe masonry, provide either ladder or truss type with single pair of side rods and cross rods spaced not more than 16 inches o.c.

2.05 TIES AND ANCHORS, GENERAL

- A. General: Provide ties and anchors made from materials that comply with this Article, unless otherwise indicated.
- B. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.
- C. Steel Sheet, Galvanized after Fabrication: ASTM A 366/A 366M cold-rolled, carbon-steel sheet hot-dip galvanized after fabrication to comply with ASTM A 153.
- D. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.06 MISCELLANEOUS ANCHORS

- A. Anchor Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length indicated and in the following configurations:
 - 1. Headed bolts.
 - 2. Nonheaded bolts, bent in manner indicated.
- B. Post-installed Anchors: Anchors as described below, with capability to sustain, without failure, load imposed within factors of safety indicated, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Type: Chemical anchors.
 - 2. Type: Expansion anchors only as noted on drawings.
 - 3. For Post installed Anchors in Concrete: Capability to sustain, without failure, a load equal to four times the loads imposed.

2.07 MISCELLANEOUS MASONRY ACCESSORIES

- A. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch steel wire, hot-dip galvanized after fabrication.

2.08 MASONRY CLEANERS

- A. Job-Mixed Detergent Solution: Solution of 1/2-cup dry measure tetrasodium polyphosphate and 1/2-cup dry measure laundry detergent dissolved in 1 gal. of water.
- B. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.09 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in the form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification.
 - 1. For masonry below grade, in contact with earth, and where indicated, use Type M.
 - 2. For reinforced masonry and where indicated, use Type S.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 5 of ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.

2. Provide grout with a slump of 8 to 10 inches as measured according to ASTM C 143.

2.10 SOURCE QUALITY CONTROL

- A. Concrete Masonry Unit Tests: For each type of concrete masonry unit indicated, units will be tested according to ASTM C 140.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Before installation, examine rough-in and built-in construction to verify actual locations of piping connections.

3.02 INSTALLATION, GENERAL

- A. Build single-wythe walls to the actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.
- D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.03 CONSTRUCTION TOLERANCES

- A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:
- B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.
- C. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, nor 1/2 inch maximum.
- D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.
- E. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.

3.04 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Lay exposed masonry in a running bond pattern unless noted otherwise. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: In each course, rack back one-half-unit length for one-half running bond or one-third-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.
- E. Fill space between hollow-metal frames and masonry solidly with mortar, unless otherwise indicated.

- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
- G. Fill cores in hollow concrete masonry units with grout 24 inches under anchor bolt locations unless otherwise indicated.

3.05 MORTAR BEDDING AND JOINTING

- A. Lay hollow masonry units as follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. Bed webs in mortar.
 - 3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.

3.06 MASONRY JOINT REINFORCEMENT

- A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches. Space reinforcing a maximum of 16" on center.
- B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.07 LINTELS

- A. Install steel lintels where indicated or as required for masonry openings shown on drawings. Lintel sizes to be sufficient to support weight of masonry and deflection requirements.
- B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
 - 1. Provide prefabricated or built-in-place masonry lintels. Use specially formed bond beam units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.
- C. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.08 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
 - 1. Construct formwork to conform to shape, line, and dimensions shown. Make it sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements of ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
 - 1. Comply with requirements of ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.09 FIELD QUALITY CONTROL

- A. Testing Frequency: Tests and Evaluations listed in this Article will be performed during construction for each 5000 sq. ft. of wall area or portion thereof.
- B. Mortar properties will be tested per ASTM C 780.
- C. Grout will be sampled and tested for compressive strength per ASTM C 1019.

- D. Concrete Masonry Unit Tests: For each type of concrete masonry unit indicated, units will be tested according to ASTM C 140.
- E. Prism-Test Method: For each type of wall construction indicated, masonry prisms will be tested per ASTM C 1314, and as follows:
 - 1. Two prisms for each type of masonry.

3.10 REPAIRING, POINTING, AND CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing the surfaces thoroughly with clear water.
 - 5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

3.11 MASONRY WASTE DISPOSAL

- A. Recycling: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Excess Masonry Waste: Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

SECTION 05 50 00

MISCELLANEOUS METAL WORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.02 SECTION INCLUDES

- A. Miscellaneous metal work items as described in this Specification Section.
- B. Section includes, without limitation, providing and installing:
1. Shop applied ferrous metals priming paint for miscellaneous metals.
 2. Anchorages, brackets, supports, inserts and backing required for a complete job but not included in other sections.
 3. All other ferrous or non-ferrous metal work not specifically given to other Sections and necessary for a complete job, but including:
 - b. Galvanized steel framing and supports for mechanical and electrical equipment.
- C. Items To Be Furnished Only: Furnish the following items for installation by the designated Sections
1. Section 03 31 00 - Concrete:
 - a. Sleeves, anchors, inserts, plates and similar items.
 2. Section 04 22 24 – Masonry:
Miscellaneous metal and iron sleeves, anchors, inserts, plates and lintels to be built into masonry walls, including:
 - a. Furnishing loose bearing plates with headed anchors to support steel beams on masonry.
 - b. Loose steel bearing and leveling plates, including bearing plates for steel joists, beams and purlins, galvanized at exterior locations and in exterior walls.
 - c. Epoxy anchors to fasten seismic clips to masonry.
 - d. Anchor bolts to fasten spandrel beams to masonry.
 - e. Galvanized steel lintels at exterior locations.
 - f. Steel lintels with shop applied zinc-rich primer at interior locations.

3. Miscellaneous items
 - a. Miscellaneous steel trim, galvanized at exterior locations.
 - b. All plates, threaded rods and angles required to support suspended HVAC units from building structure.

1.03 RELATED SECTIONS

- A. Section 03 31 00 – Concrete
- B. Section 04 22 24 - Concrete Unit Masonry
- C. Section 09 90 10 – Painting

1.03 SUBMITTALS

- A. Submit shop drawings, product data under provisions of Section 01 33 00. Include plans, elevations, sections, details, and attachments to other work. Show anchorage and accessory items.
- B. Submit samples of product as requested by the architect. Submit 8" square samples of each metal shop or factory finish (final surface treatment) required. Prepare samples on metal of same alloy and gauge to be used for the work. Label each sample to identify substrate material and finish. Provide hardware samples.
- C. Manufacturer's Data: Submit manufacturer's specifications, anchor details and installation instructions for any prefabricated products to be used in the work of this section

1.04 REGULATORY REQUIREMENTS

- A. Conform to all federal, state, and local codes.

1.05 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Engineering Calculations: Calculations stamped by a registered professional engineer are required for load bearing fabrications. The Structural Engineer's written approval of such calculations shall be obtained before commencing fabrication

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.

1.07 FIELD MEASUREMENTS

- A. Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 GENERAL FABRICATION REQUIREMENTS

- A. Welding shall conform to the applicable requirements of the American Welding Society. Welding shall be done in a manner that will prevent permanent buckling and all welds exposed in the finished work shall be ground to an architectural quality smooth appearance approved by the Architect.
- B. Exposed surfaces shall have a smooth finish and sharp, well defined lines. Sections shall be formed to shape and size with sharp lines and angles. Curved work shall be sprung evenly.
- C. Necessary rabbets, lugs and brackets shall be provided so that work can be assembled and anchored in a neat and substantial manner. Holes for bolts and screws shall be drilled. Fastenings shall be concealed where practicable.
- D. Work shall be fabricated and installed in a manner that will provide for expansion and contraction, prevent the shearing of bolts, screws and other fastenings, insure rigidity and provide close fitting of sections. Joints exposed to the weather shall be formed to exclude water.
- E. All galvanized metal shall bear a stamp indicating ASTM number and weight of zinc coating in ounces per square foot.

2.02 MATERIALS

- A. Materials shall conform to the latest edition of the specifications or manufacturer's standards.
 - 1. Steel Shapes ASTM A-36 Bars & Plates
 - 2. Anchor Bolts ASTM A-307 Grade A
 - 3. Structural Bolts ASTM A-325 (unless shown or indicated otherwise)
 - 4. Weld Material E70XX Welding Electrodes For manual shielded metal-arc welding, AWS A5.1 or A5.5, E60 or E70 series
 - 5. Galvanizing ASTM A-123, , or A-153 as applicable; 2.0 ounces zinc per square foot, unless otherwise indicated; provide under its section.
 - 6. Stainless Steel Type 304L, ASTM A 276
 - 7. Steel bar gratings ASTM A-569 or A-36
 - 8. Bitumastic Preservative Mil-P-15230 [Where shown and all embedded steel]
 - 9. Galvanized Sheet Steel ASTM A-526 or A-526, G-90
 - 10. Hot-Rolled Carbon Steel Bars (and Bar-Size Shapes): ASTM A-36 or A-529, grade as selected by fabricator.
 - 11. Brackets, flanges and exposed fastenings: Shall be of the same materials, color and finish as the metal to which they are applied, unless shown or specified otherwise.
 - 12. Expansion bolts at concrete: Red Head (or equal) wedge anchors.
 - 13. Expansion bolts at CMU: Hilti (or equal) epoxy/masonry anchors
- B. Hangers and suspension: Where required, provide Uni-strut (or equal) A1000 or assemblies of types recommended by manufacturer for application.
- C. Galvanizing Repair Paint: High zinc dust content paint, ZRC (or equal), having 95% zinc. by weight. Two coats always are required.

2.03 SHOP PAINTING

- A. All surfaces of ferrous metal except galvanized steel shall be given a shop coat of red lead, zinc-chromate paint or other approved rust-inhibitive primer unless otherwise specified. All surfaces which will be inaccessible for painting after erection, except contact surfaces of riveted or welded connections, shall be given two coats of paint before being assembled or erected. All marred surfaces of shop coats shall be thoroughly recoated. Field painting is specified under Section 09 91 00.

2.04 ANCHORING CEMENT:

- A. Anchoring non-shrink grout shall be Hallemite "Por-rok" or equal.

2.05 CLEANING:

- A. Clean under provisions of Section 01 70 00.
- B. The Contractor shall clean the miscellaneous metal work by removing all excess sealants, dirt and foreign materials, restoring finishes, leaving work in a good and satisfactory condition. The Contractor shall perform the work of cleaning using methods and materials as recommended by the manufacturers of the materials used and as approved.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Review existing field conditions of areas to receive the work of this Section before proceeding with fabrication. Do not proceed with installation of metal fabrications until all unsatisfactory conditions which would impair the strength or appearance of the work have been corrected.

3.02 INSTALLATION OF METAL FABRICATIONS

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners and furnish all necessary setting drawings, diagrams, and templates where necessary for securing miscellaneous metal items to in-place construction including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required. Use galvanized bolts at exterior. Coordinate delivery of such items to project site.
- B. Cutting: Perform cutting, drilling and fitting required for installation of miscellaneous metal items. Do not cut structural members in field to facilitate fitting without written permission of the Architect for each specific condition.
- C. Fitting: Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- D. Placement: Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or

anchors in formwork for items which are to be built into concrete, masonry or similar construction.

- E. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work. Do not field weld stainless steel or aluminum.
- F. Grouting: Set bearing plates required for support of the work of this Section level and to correct elevation using steel shims or wedges and grout solid using specified non-shrink grout.
- G. Touch-Up of Shop Primers: Touch up field welds and unprimed steel using specified shop primers and following procedures specified for shop work.
- H. Existing work: Remove and re-install or re-locate existing metal fabrications as required to complete the work. Drill, tap, or weld existing assemblies as required to complete the work and to attach existing work to new work.

3.03 PRODUCTS

- A. Anchors and Bolts:
Anchors and bolts shall be provided where indicated and where necessary for fastening work in place. They shall be embedded in concrete and masonry as the work progresses. Sizes, kinds and spacing of anchors not indicated or specified shall be as necessary for their purpose.
- B. Steel:
Steel for the support of piping and appurtenances shall be provided to the details indicated and as necessary for the complete installation.
- C. Pipe Hangers and Miscellaneous Supports:
Pipe hangers and miscellaneous supports shall be provided as required.
- D. Miscellaneous Framing and Supports:
 - 1. Provide miscellaneous steel framing and supports which are not a part of structural steel framework, as required.
 - 2. Fabricate miscellaneous units to sizes, shapes and profiles shown or, if not shown, of required dimensions to receive work to be supported by framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars, of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.
 - 3. Equip units with integrally welded anchor straps for casting into poured concrete or building into masonry wherever required. Furnish concrete inserts if units must be installed after concrete is placed.
- E. Metal support framing:
 - 1. Provide metal framing as necessary to support ceiling mounted toilet partition pilasters in accordance with partition manufacturer's instructions and requirements.
 - 2. Provide metal framing as required to support light fixtures, piping, HVAC equipment and ductwork below hard or acoustical ceilings or as required to span across/over/under suspended equipment. Coordinate with the associated MEP contract documents.

F. Pipe Railings

1. Pipe rails for exterior stairs and landings shall be constructed of standard galvanized steel pipe unless noted otherwise. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
2. The railing design shall be as per drawings.
3. Railing posts set in concrete shall be installed in pipe sleeves, securely anchored using non-shrink grout to minimum 4" depth. Inside dimensions of sleeve is to be not less than 1/2 inch greater than the outside dimensions of post with metal plate forming bottom closure.
4. Railings shall meet all state building, fire and accessibility code requirements for height, openings, end extensions, etc.
5. Rails attached to walls shall be anchored securely and all ends shall return to terminate against wall. Close ends of returns with prefabricated end fittings unless clearance between end of rail and wall is 1/4 inch or less.
6. Provide metal materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
7. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
8. Fabrication
 - a. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
 - b. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
 - c. Form work true to line and level with accurate angles and surfaces.
 - d. Cut, reinforce, drill, and tap as indicated to receive any finish hardware, screws, and similar items.
 - e. Connections: Fabricate railings with welded connections unless otherwise indicated.
 - f. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove flux immediately.
 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces. Grind butt welds flush and grind or fill exposed fillet welds to smooth profile. All exposed welds are to be continuous, level and smooth to an Architectural quality finish to the satisfaction of the Architect.
 - g. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

9. Finishes
 - a. All exterior railings and associated components are to be galvanized, primed & painted in accordance with Specification Section 09 91 00 – Painting.

3.04 REPAIR OF ZINC COATINGS:

- A. All zinc coatings that have been damaged in handling or transporting or in welding, riveting or bolting shall be repaired by the application of a thick paste made from galvanizing repair compound conforming to Federal Specification 0-G-93 and water. Areas to be repaired shall be cleaned thoroughly, including removal of slag on welds, before the paste is applied. Surfaces to be coated with paste shall be heated with a torch so that all metallics in the paste will be melted when applied to the heated surfaces. Extreme care shall be taken to see that adjacent zinc-coated surfaces are not damaged by torch. Molten metal shall spread uniformly over all surfaces to be coated and the excess metal wiped off.

3.05 FIELD PAINTING

- A. Specified as scheduled under Section 09 91 00 - Painting.

3.06 DISSIMILAR MATERIAL

- A. Where aluminum comes in contact with metals other than stainless steel, zinc, white bronze or other metals compatible with aluminum, then those surfaces shall be kept from direct contact by painting the dissimilar metal with a coating of heavy-bodied bituminous paint, a good quality caulking placed between the metals, non-absorptive tape or gasket.

END OF SECTION

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SECTION 06 20 10

CARPENTRY AND MILLWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.02 SECTION INCLUDES

- A. All labor and materials, equipment and installation of all work required to complete the construction and installation of all work required to this trade as indicated on the drawings and as herein specified.

1.03 RELATED SECTIONS

- A. Section 09 91 00 – Painting

1.04 REFERENCES

- A. American Plywood Association
- B. American Woodwork Institute

1.05 SUBMITTALS

- A. Submit shop drawings, product data and samples under provisions of Section 01 33 00.
- B. For all wood products designated in this specification as “FSC certified,” provide evidence of compliance with Forest Stewardship Council (FSC) standards by submitting certificates with company Chain-of-Custody (COC) number and also identifies each FSC certified product on a line-item basis.

1.06 QUALITY ASSURANCE

- A. Work shall comply with all local and state building and fire codes.
- B. Material and workmanship of all woodwork shall conform to the Premium grade requirements of the AWI Quality Standards.
- C. Rough Carpentry Lumber: Visible grade stamp, of agency certified by National Forest Products Association (NFPA).

1.07 REGULATORY REQUIREMENTS

- A. All materials are to conform to the minimum requirements of the State Building Code or as indicated in this specification, whichever is stronger or stricter.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Protect all materials from weather. Do not store in damp or wet areas. Stack lumber and plywood, and provide air circulation within stacks.

1.09 FIELD MEASUREMENTS

- A. Verify all field dimensions at the site prior to fabrication.

1.10 COORDINATION

- A. Coordinate work with other trades and under provisions of Section 01 31 00.

1.11 SUSTAINABLE BUILDING MATERIAL REQUIREMENTS

- A. All wood products used on this project are to be designated as "FSC-Certified" according to the rules of the Forest Stewardship Council (FSC) (www.fscus.org).

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Framing Lumber
 - 1. Moisture content when delivered to the project shall not exceed 19 percent.
 - 2. Wood studs, blocking, bridging, nailing pieces, shall be Douglas Fir, Coast Region construction grade "J" and "P" or Southern Pine No. 1. All structural load bearing lumber shall be of quality to provide 1200 psi units fiber stress.
 - 3. Mark of treating company certifying type of treatment applied on fire retardant treated and pressure preservative treated lumber.
- B. Plywood shall be of the types and grades listed below:
 - 1. Exposed exterior plywood to be exterior paint-grade, knot-free in thickness as noted on the drawings. Where thickness is not indicated, plywood shall be 3/4" thick. Exposed face is to be sanded smooth and painted with a primer and two coats of finish paint.
 - 2. Exposed interior plywood to be American Plywood Association A-C, Group 1, Exposure 1, in thickness as noted on the drawings. Where thickness is not indicated, plywood shall be 3/4" thick.
 - 3. Each panel of plywood shall be identified with a stamp as to type, grade and species by the grade trademark of the American Plywood Association.

- Mark of treating company certifying type of treatment applied on fire retardant treated and pressure preservative treated plywood.
4. All sheathing plywood shall be in accordance with Chapter 23 of the State of Rhode Island Building Code.
- C. Interior and Exterior Woodwork for Paint Finish
1. Quality: Wood shall be free from knots, pitch or sap streaks, molded and executed as detailed and noted on the drawings.
 2. Species: Wood shall be clear, kiln-dried close-grained hardwood unless otherwise indicated.
- D. Wood Treatment
1. Wood preservative used to treat the wood materials shall be alkaline copper quaternary (ACQ).
 2. Treat wood materials requiring pressure impregnated preservatives to FS TT-W-571, Table 3.
 3. Deliver treated materials cut to required sizes. Minimize field cutting.
 4. Re-dry wood after pressure treatment to maximum 19 percent moisture content.
 5. Use stainless steel fasteners where installed in pressure treated wood.

PART 3 - EXECUTION

3.01 CONSTRUCTION

- A. Rough Carpentry
1. General: Carefully lay out, cut, fit and rout all framing, blocking and other items of carpentry in such a manner as to minimize shrinkage and insure stability. Perform all carpentry work required for building in work of other trades and work to the details indicated and as required by field conditions.
 2. Provide fire retardant treated wood products as shown and as follows:
At exposed or semi-exposed wood in fire rated assemblies and in spaces having limited flame spreads for exposed combustibles. Where blocking is concealed in fire rated assemblies and all areas as required by code.
 3. Includes: Rough carpentry shall consist of the installation of sleepers, blocking, nailers, curb nailers, furring, joists, studding, rafters, stringers, centers, rough flooring, grounds, screeds, and such other items of rough carpentry as may be required for proper construction and to complete the work. Absence of illustration, detail or specification will not relieve the Contractor from responsibility or carrying out the work.
 4. Lumber and other rough work shall be properly framed closely fitted, accurately set to the required lines and levels and rigidly secured in place.
Joists and rough stair stringers shall be set with the crown edge up, and the bottom edges shall be free from pronounced defects.
Leveling of sills, etc., on masonry or concrete shall be done, as required and grouted with cement mortar.
Studs and joists shall be sized to give true surfaces for finish.
Nailing and spiking shall be done in a thorough manner with nails of ample size, spikes larger than 20d being used where practicable.
Special framing or construction, not explicitly shown on drawings or specified, shall be provided as required to complete the work in the best and most workmanlike manner.

5. Mechanical equipment clearances: Members shall be framed to allow for passage of pipes or ducts as required to avoid cutting of structural members. No members shall be cut, notched or bored for the passage of such pipes without permission of the Architect, and all members damaged by cutting shall be reinforced as directed by the Architect.
6. Preservative treated lumber: All wood in direct contact with concrete, masonry, soil or gravel shall be preservative treated wood, ground contact grade with a 40 year warranty. Wood shall be free from large or loose knots, shakes, checks and warp. Apply two coats of same preservative used in original treatment to all sawn or cut surfaces of treated lumber, in accordance with AWPA M4.
Use stainless steel fasteners where installed in the pressure treated wood.
7. Studs: Studs shall be no less than 2"x4", spaced not over 16 inches on center, unless otherwise shown. Studs shall be doubled around all openings. Corners shall be thoroughly spiked together and made solid. All bearing partitions shall be provided with double top and bottom plates. Partitions shall have one row of horizontal bridging for the full width of studding, cut in and securely nailed. Studs shall be framed as shown or required for the proper installation of trim, plumbing, and other work to be concealed. Studding shall be installed for the support of all fixtures and accessories as required.
8. Furring and Grounds: Shall be minimum 1" x 3" strips, as shown on drawings or as required to match the condition, spaced maximum 16" on center and continuous at all vertical edges of framed openings. Furring shall be secured to concrete, brick or masonry units by power driven fasteners. Face of furring and grounds shall form a true, even plane for installation of materials thereon. Species shall be Fir or Southern Pine, at Contractor's option.
9. Trim
 - a. Trim shall be mitered and jointing shall be tight and formed to conceal shrinkage. All mortise, tongue-and-groove and shiplap joints shall be set in neutral white caulking compound. Interior woodwork shall be back primed and painted before installation.
 - b. Interior trim shall be milled, fabricated and erected as shown on the drawings. All finishes shall be machine-sanded at the mill and sand-papered and primed at the job.
Wood used for trim is to be any close-grained hardwood.
All interior trim including base, chair rails, ceiling mouldings, casings, window stools and aprons shall be of stock designs. All joints shall be made in an approved manner to conceal shrinkage and shall be tight, straight, plumb and level, in perfect alignment and closely fitted. Joints shall be secured with finish nails set for putty stopping. Window and door trim shall be in single lengths. Base shall be in long lengths. Mouldings shall be mitered at corners and coped at angles. These joints shall be made at the mill.
10. Temporary Enclosures and Protection: Temporary enclosures of doors, windows and other exterior openings shall be provided when necessary to meet conditions specified. Maintain in good repair and remove when no longer required. Door and window frames shall be protected from traffic and from mortar drippings.

- B. Blocking
1. Blocking layout and size: Continuous and solid, fire retardant 3/4 inch plywood or fire retardant 2x4 or larger where additional support is required.
 2. Provide blocking in addition to any indications on the drawings in locations as follows:
 - a. Millwork attached to walls or ceilings.
 - b. All standing and running trim
 - c. Equipment attached to walls or ceilings.
 - d. At grab bars.
 - e. Toilet Room accessories.
 - f. Handrail brackets.
 - g. Wall hung lavatories.
 - h. At all door wall stops.
 - i. As required to support light fixtures.
 - j. At exterior items or fixtures mounted or attached where insulating sheathing, or cement, vinyl, PVC, or wood-lapped board siding or trim is used.
 3. Attach blocking as follows:
 - a. In metal stud partitions: Screw attach through stud flanges.
 - b. At masonry: With oval head toggle bolts and washers or with epoxy tube and sleeve systems.
 - c. At concrete: With expansion shield bolts.
 - d. At steel: With flat head bolts/nuts or approved power actuated fasteners.
- C. Construction Hardware
1. Furnish and install all bolts, nuts, expansion shields, lag screws, toggle bolts, wood screws, nails, flat cap metal nailing discs, staples, power driven anchors and other rough hardware as required.
 2. Rough hardware items shall be of appropriate type and proper capacity and size as required for each specific application.
 3. All fasteners used on exterior work shall be hot dip galvanized or stainless steel.
 4. Concrete and masonry anchors: Where anchors are not included in concrete or masonry construction sections, anchors shall be galvanized machine screws or bolts with standard expansion-shield type concrete anchors, Phillips "Red Head" Masonry Anchors or approved equal, of sizes and types as required.
 5. Fasteners used at treated wood: Fasteners meeting manufacturers approval and requirements if not listed use stainless steel.

3.02 CLEANING

- A. Clean work under provisions of 01 70 00.

3.03 PROTECTION OF FINISHED WORK

- A. Protect finished work under provisions of Section 01 70 00.

END OF SECTION

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SECTION 06 65 10

CELLULAR (PVC) FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cellular PVC Trim Boards for architectural millwork and additional items as shown on drawings.

1.02 RELATED SECTIONS

- A. Section 06 05 00 – Carpentry and Millwork

1.03 REFERENCES

- A. ASTM D792 - Density and Specific Gravity of Plastics by Displacement.
- B. ASTM D570 - Water Absorption of Plastics.
- C. ASTM D638 - Tensile Properties of Plastics.
- D. ASTM D790 - Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- E. ASTM D1761 - Mechanical Fasteners in Wood.
- F. ASTM D5420 - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by means of a Striker Impacted by a Falling Weight.
- G. ASTM D256 - Determining the Pendulum Impact Resistance of Plastics.
- H. ASTM D696 - Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C with a Vitreous Silica Dilatometer.
- I. ASTM D635 - Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
- J. ASTM E84 - Surface Burning Characteristics of Building Materials.
- K. ASTM D648 - Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
- L. ASTM D3679 - Standard Specification for Rigid Poly Vinyl Chloride (PVC) Siding.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Submit product data, manufacturer's catalogs and SPEC-DATA product Sheet for specified products.
- C. Samples: Submit three material samples representative of the texture, thickness and widths shown and specified herein.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Perform work in accordance with all federal, state and local codes and laws.
- B. Allowable Tolerances:
 - 1. Variation in component length: -0.00 / +1.00"
 - 2. Variation in component width: $\pm 1/16$ "
 - 3. Variation in component thickness: $\pm 1/16$ "
 - 4. Variation in component edge cut: $\pm 2^\circ$

5. Variation in Density -0% + 10%
- C. Workmanship, Finish, and Appearance:
1. Cellular PVC that is homogeneous and free of voids, holes, cracks, and foreign inclusions and other defects. Edges must be square, and top and bottom surfaces shall be flat with no convex or concave deviation.
 2. Uniform surface free from cupping, warping, and twisting.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Trim materials should be stored on a flat and level surface on a full shipping pallet. Handle materials to prevent damage to product edges and corners. Store materials under a protective covering to prevent jobsite dirt and residue from collecting on the boards.

1.06 WARRANTY

- A. Provide Warranty under provisions of Section 01 78 00.
- B. Provide manufacturer's 25 year warranty against defects in manufacturing that cause the products to rot, corrode, delaminate, or excessively swell from moisture.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements of this Specification Section, provide products listed herein from one of the following:
 1. Azek Building Products
 2. Fypon LLC
 3. Versatex
- B. Basis of Design: Azek Building Products
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS

- A. Material: Expanded rigid poly vinyl chloride material with a small-cell microstructure and density of .55 grams/cm³.
 1. Finish to be manufacturer's standard factory finish white.
 2. Exposed surface texture to be Traditional (smooth)
 3. Material shall have a minimum physical and performance properties specified as follows.
- B. Performance and physical characteristic requirements:

PROPERTY	UNITS	VALUE	ASTM Method
<u>PHYSICAL</u>			
Density	g/cm ³	0.55	D 792
Water Absorption	%	0.15	D 570
<u>MECHANICAL</u>			
Tensile Strength	psi	2256	D 638
Tensile Modulus	psi	144,000	D 638
Flexural Strength	psi	3329	D 790
Flexural Modulus	psi	144,219	D 790
Nail Hold	Lbf/in of penetration	35	D 1761
Screw Hold	Lbf/in of penetration	680	D 1761
Staple Hold	Lbf/in of penetration	180	D 1761
Gardner Impact	in-lbs	103	D5420
Charpy Impact (@23°C)	ft-lbs	4.5	D256
<u>THERMAL</u>			
Coefficient of Linear Expansion	in/in/°F	3.2 x 10 ⁻⁵	D 696
Burning Rate	in/min	No burn when flame removed	D 635
Flame Spread Index	--	20	E 84
Heat Deflection Temp 264 psi	°F	150	D 648
Oil Canning (@140°F)	°F	Passed	D 648

2.03 ACCESSORY PRODUCTS

- A. Fasteners hidden from view: All types of fasteners that work well with wood will work as well or better with AZEK™.
 Fasteners to be stainless steel.
 Fasteners from a nail gun work well, t-head finish nails are preferred.
- B. Exposed fasteners: All fasteners exposed to view are to use the FastenMaster Cortex Concealed Fastening System for PVC trim (or equal) consisting of Torx TTap drive system screws and color-matching plugs. Install in accordance with manufacturer's instructions.
- C. Adhesives:
 - 1. Bonding AZEK™ to AZEK™, solvent based adhesive systems used for rigid PVC pipe work very well. Latex adhesives provide more working time.
 - 2. Bonding AZEK™ to Various Substrates, numerous standard construction adhesives work well. In general, contact cement, epoxy, rubber based and urethane adhesives are acceptable. Test a particular adhesive for suitability.
- D. Sealants:
 - 1. Ensure proper sealants are used as they comply with the following:
 - a. Urethane, polyurethane or acrylic sealants without silicone.
 - b. Latex sealants complying with ASTM C834, Type P.
 - c. Manufacturer approved sealants, subject to confirmation at time of construction, include:
 - 1) Pecora Corporation; AC-20+.

- 2) Sonneborn; Sonolac.
- 3) Tremco; Tremflex 834.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Manufacturers instructions: Comply with manufacturer's product catalog installation instructions and product technical bulletin instructions.
- B. Cutting: Sheets and boards can be cut using standard saws and carbide blades used for wood.
- C. Drilling: Drilling can be accomplished using twist drills recommended for metals.
- D. Milling: Milling can be accomplished using standard milling machines of various types. Relief Angle 20° to 30°; Cutting speed to be optimized with the number of knives and feed rate.
- E. Routing: Routing can be accomplished using standard carbide tipped routers used in woodworking.
- F. Where two pieces of trim join at a 90 degree angle (corner boards, etc.) the trim is to be mitered at a 45 degree angle.
- G. All adjoining PVC materials are to be glued together using the specified adhesive.
- H. Edge Finishing: Various sanding, grinding or filing tools. Do not allow excessive frictional heat to build up.
- I. Nail Location: Standard nailing patterns are recommended. You can fasten closer to the edge than with wood.
- J. Linear Thermal Expansion and Contraction: When properly fastened, allow for 1/8" movement for each 18' board. When butting boards together, glue the butt joint with PVC cement. This will eliminate any separation at the joint. The gap can be accommodated at the ends of the run.

3.02 STANDING AND RUNNING TRIM INSTALLATION

- A. Install cellular PVC trim to comply with manufacturer's written instructions.
- B. Install trim with minimum number of joints practical, using full-length pieces from maximum lengths available. Do not use pieces less than 24 inches long except where necessary.
 1. Use scarf joints for end-to-end joints.
 2. Stagger end joints in adjacent and related members.
 3. Use 2 fasteners per every framing member for trim boards applications. For trimboards 12" or wider and sheets, provide additional fasteners.
 4. Fasteners must be installed no more than 2" from the end of each board.
 5. Do not rip 3/8" and 1/2" sheet product into trim pieces.
 6. Glue to a substrate and mechanically fasten.
- C. Adhesives:
 1. Glue PVC trim to trim joints with recommended cellular PVC cement, to prevent joint separation.
 2. Secure glue joint with fastener on each side of the joint to allow adequate bonding time.
 3. Surfaces to be glued: Smooth, clean and in complete contact with each other.

3.02 CLEANING

- A. Clean work under provisions of Section 01 70 00.

3.03 PROTECTION OF FINISHED WORK

- A. Protect finished work under provisions of Section 01 70 00.

END OF SECTION

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SECTION 06 83 16

FIBERGLASS REINFORCED PLASTIC PANELS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The furnishing and installation of fiberglass reinforced plastic (FRP) wall paneling.

1.02 RELATED SECTIONS

- A. Section 06 20 10 - Carpentry and Millwork

1.03 REFERENCES

- A. ASTM E84 Standard Test Method for Surface Burning Characteristics
- B. ASTM D2583 Barcol Hardness
- C. ASTM D256 Izod Impact Strengths (ft #/in)
- D. ASTM D570 Water Absorption (%)
- E. ASTM D5319 Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product data: Submit manufacturer's specifications of materials and installation instructions.
- C. Submit two 6" x 12" samples of each type of panel, trim and fastener.
- D. Submit color samples.
- E. Submit test reports
- F. Sustainable Building Material Submittal:
 - 1. Submit printed statement of VOC content and chemical components of adhesives and sealants.
 - 2. Submit printed literature for laminating adhesive used in factory-laminated plastic panels, indicating that product contains no urea formaldehyde.

1.04 MAINTENANCE DATA

- A. Submit under provisions of Section 01 78 00.
- B. Submit cleaning and maintenance data including procedures for stain removal and cleaning.

1.05 QUALIFICATIONS

- A. Installer: Company specializing in installing the panels with minimum of three years documented experience.

1.06 REGULATORY REQUIREMENTS

- A. Conform to all Federal, State and Local Code requirements.
- B. Conform to the manufacturer's recommendations to achieve the fire resistive ratings as listed by Underwriter's Laboratories.
- C. All building areas designated to be fire rated or as required by State or local codes and scheduled for these panels shall receive a fire resistive system to meet U.L. requirements.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Storage shall be in building, closed to the weather with temperatures ranging from 60°F to 85°F at not more than 70% relative humidity.
- C. Remove foreign matter from face of panel by using a soft cloth or brush to avoid scratching or abrasions.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Do not install panels when building interior temperature is below 65°F, above 90°F or above 70% relative humidity.
- B. These conditions shall be maintained 48 hours prior to, during and after installation.
- C. Provide ventilation to disperse fumes during application of adhesive as recommended by manufacturer's adhesive instructions.

1.09 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on drawings. Any inconsistencies shall be reported to the architect prior to installation.

1.10 SEQUENCING

- A. Installation of panels may commence only after an inspection of all electrical, mechanical and plumbing work has been completed.

1.11 COORDINATION

- A. Coordinate work under provisions of section 01 31 00.

1.12 WARRANTY

- A. Provide a one year warranty under the provisions of Section 01 78 00.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Marlite Inc.
- B. Substitutions under provisions of Section 01 60 00.

2.02 MATERIALS

- A. Marlite FRP: Class A fire rating
 - 1. Surface texture to be Pebbled
 - 2. Fire Rating: Marlite FRP is to have a Class A (I) Fire Rating per ASTM E84 latest version.
 - 3. Size: 4' x 8' x 3/32" (.090")
 - 4. Color as selected by Architect from manufacturer's standard colors.
 - 5. Performance Properties
 - a. Meets USDA/FSIS Requirements.
 - b. Barcol Hardness (scratch resistance) - ASTM D2583: 35 (higher is better)
 - c. Izod Impact strength – ASTM D256: 7.2 foot pounds per inch (higher is better)
 - d. Water Absorption – ASTM D570: 0.72 percent (lower is better)
 - e. Meets the following standards:
 - 1. ASTM D5319 Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels
 - 2. ASTM D968-05 Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
 - 3. ASTM D3002 - 07 Standard Guide for Evaluation of Coatings Applied to Plastics
 - 4. NEMA LD-2000 Sec. 3.4 Cleanability/Stain Resistance
 - 6. A means of frontside identification and confirmation of meeting Class I (A) interior finish requirements after installation and while in service (without labels), embossed FXI only.
- B. Accessories
 - 1. Provide one-piece, PVC inside and outside corner moldings, division bars at joints and edge trim as required for installation of wall panels. Color to coordinate with panels and be integral throughout.
 - 2. Adhesive as recommended by panel manufacturer and meets ASTM Specification C557.
 - 3. Silicone sealant as recommended by panel manufacturer. Color to match panels and trim.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that all substrates receiving the panels are acceptable for product installation and are in proper condition and dry. Panels must be applied over a smooth, solid, flat, clean sub-wall.

3.02 PROTECTION

- A. Protect existing elements surrounding the work of this section from damage or disfigurement.

3.03 CONDITIONING

- A. Panel packages are to be opened and allowed to acclimate for 48 hours prior to installation. The building is to be weather tight with HVAC operational and conditioned to final use ambient humidity and temperature. Room temperature should be approximately 65° F or above before beginning installation.

3.04 INSTALLATION

- A. Install all panels and trim in accordance with the manufacturer's installation instructions.
- B. Adhere all panels to the wall in accordance with the manufacturer's instructions.
- C. NOTE: All moldings must provide for a minimum 1/8 inch of panel expansion at joints and edges, to insure proper installation.

3.05 CLEANING

- A. Clean under provisions of Section 01 70 00.
- B. Repair or replace products that have been installed and are damaged.
- C. Clean installed products in accordance with manufacturer's instructions.

END OF SECTION

SECTION 07 26 16

UNDER-SLAB VAPOR BARRIER

PART 1 – GENERAL

1.01 SUMMARY

- A. Products Supplied Under This Section
 - 1. Vapor Barrier, seam tape, pipe boots, detail strip for installation under concrete slabs.

1.02 RELATED SECTIONS

- A. Division 3 - Concrete Construction

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs
 - 2. ASTM E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs
 - 3. ASTM E 1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
- B. American Concrete Institute (ACI)
 - 1. ACI 302.1R Vapor Barrier Component (plastic membrane).

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Quality Control / Assurance
 - 1. Independent laboratory test results showing compliance with ASTM & ACI Standards.
 - 2. Manufacturer's samples, literature
 - 3. Manufacturer's installation instructions for placement, seaming and pipe boot installation

PART 2 – PRODUCTS

2.01 MATERIALS

- A. 15 mil Vapor Barrier:
Extremely low permeance vapor barrier for critically sensitive, low permeance floor coverings.
 - 1. Vapor Barrier must have the following qualities
 - a. Thickness of Barrier (plastic) ACI 302.1R Not less than 15 mils
 - b. Water Vapor Barrier ASTM E-1745 Meets or exceeds Class A
 - c. Water Vapor Permeance ASTM F 1249 0.0086 Perms
 - d. Water Vapor Transmission Rate ASTM F 1249 0.0036
 - e. Puncture Resistance ASTM D 1709 2266 grams
 - f. Tensile Strength ASTM D 882 70.6 lbf/in

1. Acceptable 15 mil Vapor Barriers
 - a. Stego Wrap (15 mil) Vapor Barrier by Stego Industries LLC
 - b. Griffolyn 15-mil Green by Reef Industries, Inc.
 - c. Perminator 15-mil by W.R. Meadows

2.02 ACCESSORIES

- A. Seam Tape: High Density Polyethylene Tape with pressure sensitive adhesive. Minimum width 4 inches.
- B. Pipe Boots: Construct pipe boots from vapor barrier material and pressure sensitive tape per manufacturer's instructions around all penetrations through the vapor barrier.
- C. Perimeter / edge seal: Provide double sided tack tape to seal the vapor barrier around the entire perimeter wall or footing/grade beam. Ensure the concrete is clean and dry prior to adhering tape.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Ensure that subsoil is approved by architect
 1. Level and tamp or roll aggregate, sand or tamped earth base.
- B. Contractor shall use a screeding system that does not puncture the vapor barrier.

3.02 INSTALLATION

- A. Install Vapor Barrier:
 1. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643-98.
 - a. Install a vapor barrier as specified herein under all concrete slabs-on-grade and other locations as noted in the Construction Documents.
 - b. Unroll Vapor Barrier with the longest dimension parallel with the direction of the pour.
 - c. Lap Vapor Barrier over footings and seal to foundation walls using tack tape.
 - d. Overlap joints 6 inches and seal with manufacturer's seal tape.
 - e. Seal all penetrations (including pipes) with manufacturer's pipe boot.
 - f. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
 - g. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all four sides with tape.

3.03 CLEANING

- A. Clean under provisions of Section 01 70 00.

END OF SECTION

SECTION 07 84 13

FIRESTOPPING

PART 1 – GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.02 RELATED SECTIONS

- A. Division 22 - Plumbing
B. Division 23 – Mechanical
C. Division 26 – Electrical

1.03 DESCRIPTION OF WORK

- A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary or required for the complete execution of all firestopping and smoke seal work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

NOTE – Firestopping is defined as a material, or combination of materials, to restore the integrity of fire rated walls and floors by maintaining an effective barrier against the spread of flame, smoke and toxic gases.

1. Provide firestopping and smoke seals as indicated on the drawings and as required to maintain full and continuous smoke and fire barrier between zones.

Seal all penetrations between floor/ceiling plane with expanding foam. No fiber insulation packing is permitted.

Cope and seal around all structural elements to insure smoke and fire barriers.

2. Provide firestopping of all openings in floors and walls both empty and those accommodating penetrating items such as cables and wires, cable trays, conduits, pipes, ducts, etc.; coordinate with Divisions 21, 22, 23 and 26.
3. Provide firestopping at joints between curtain walls and floor or roof openings and balance of openings between exterior walls and connecting floor assemblies at each floor.
4. Pack expansion joints in fire rated walls and floors;
5. Provide firestopping of openings at each floor level in shafts or stairwells.

1.04 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. E 814 – Standard Method of Fire Tests of Through Penetration Fire Stops.
 - 2. E 119 – Methods of Fire Tests of Building construction and Materials.
 - 3. E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

- B. Underwriters Laboratories, Inc. (UL)
 - 1. UL 1479 – Fire Tests of Through Penetration Fire Stops.
 - 2. UL 263 – Fire Tests of Building Construction and Materials.
 - 3. UL 723 – Surface Burning Characteristics of Building Materials.
 - 4. UL “Fire Resistance Directory” current year.

- C. Factory Mutual (FM) Approval Guide, current year.

- D. Building code o the jurisdiction of the work.

- E. National Fire Protection Association
 - 1. NFPA 101 – Life Safety Code.
 - 2. NFPA 70 – National Electrical Code.

1.05 QUALITY ASSURANCE

- A. Firestopping materials shall conform to both Flame (F) and Temperature (T) ratings as tested by nationally accepted test agencies per ASTM E 814 or UL 1479 fire tests.

The F rating and T rating must be a minimum of 1 hour but not less than the fire resistance rating of the assembly being penetrated.

The fire test shall be conducted with a minimum positive pressure differential of 0.03 inches of water column.

- B. Firestopping shall be performed by a Specialty Contractor trained or approved, in writing, by firestop material manufacturer.
Said specialist shall be as defined in the conditions.

Equipment used shall be in accordance with firestop material manufacturer's written installation instructions.

- C. Materials shall conform to all applicable governing codes.

- D. All materials used in the work shall be certified “asbestos free” and shall be free from any and all solvents or components that require hazardous waste disposal or, that after curing, dissolve in water.

- E. All materials shall comply with the interior finish flame spread and smoke developed requirements for the area in which they are installed. Coordinate with governing codes.

1.06 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Certification of specification compliance of all materials.
- C. Manufacturer's printed product data and drawings indicating product characteristics, performance, detail applications and limiting criteria.

Submittal shall include applicable UL and/or FM assembly numbers for each material and proposed installation.

- D. Manufacturer's installation instructions for each type of firestop required by the project.
- E. Manufacturer's approval of nominated installer of firestopping and smoke seal products.
- F. Mockups:
 - 1. Prepare job mockup of the material proposed for use in the project as directed by Architect.
Approved markups shall be left in place as part of the finished project and will constitute and standard for remaining work, including aesthetics.
- G. Manufacturers Material Safety Data Sheet (MSDS) must be submitted for each manufactured product.

1.07 PRODUCT DELIVERY STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Deliver all materials to be used in the work of this section to the project site in original sealed containers with manufacturer's brand and name, lot numbers, UL labeling, mixing and installation instructions clearly identified thereon.
- C. Store all materials in accordance with manufacturer's directions.

All materials shall be dated with shelf life and shall be removed from the project site at the contractor's expense if date is expired.

1.08 PROJECT CONDITIONS

- A. Conform to manufacturer's printed instructions for installation and when applicable, curing in accordance with temperature and humidity. Conform to ventilation and safety requirements.
- B. Coordinate work required with work of other trades; firestopping shall, where practical, precede gypsum board or other applied sheet finishing operations.
- C. Where firestopping is installed at locations which will remain exposed in the finished work, provide protection as necessary to prevent damage to adjacent surfaces and finishes, and protect as required against damage from other construction operations.

- D. Adhesive and sealants use in the building interior [i.e., inside the exterior moisture barrier] shall not exceed VOC content limits of:
 - 1. Provisions of 01 81 10 Environmental Impact of Materials.
 - 2. Aerosol Adhesives: Green Seal Standard GC-36.

1.09 PREINSTALLATION CONFERENCE

- A. A preinstallation conference shall be scheduled in accordance with Section 01 31 00 by the contractor with this specialty contractor and all other specialty contractors, subcontractor and the like to establish procedures to maintain optimum working conditions and to coordinate the work of this section with related and adjacent work.

1.10 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements, and comply with the following:
 - 1. Coordinate work of this section with similar work being performed by certain trades for their own work.
 - 2. All firestop work not performed by trades shall be performed under this section.
 - 3. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.
 - 4. Notify the Architect at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.
 - 5. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until the Architect and building inspector, if required by authorities having jurisdiction, have examined each installation.

PART 2 – PRODUCTS

2.01 SPECIFICATION STANDARD: For purposes of establishing standards of quality and levels of performance and not for the purposes of limiting competition, the basis of this specification is upon units as manufactured by one of the following and their respective model suitable for the intended application.

- A. Bio Fireshield, Inc.; Damonmill Square, Concord, MA 01742.
 - 1. Novasit K-10 Firestop Mortar
 - 2. K-2 Firestop Mortar
 - 3. Biotherm Firestop Sealants and Caulk
 - 4. Firestop Sleeve
 - 5. Firestop Pillows
 - 6. Biostop 500 Intumescent Caulk

- B. IPC Corp.
 - 1. KBS Mortar Seal
 - 2. Flamesafe Sealants and Caulk
 - 3. FPS 1000 Putty and 1077 Putty Pads
 - 4. Firestop Kits – FSK200
 - 5. KBS Seal Bags
 - 6. Quelpyre Tapes and Blankets

- C. Dow Corning
 - 1. Firestop Sealant #2000
 - 2. Firestop Foam #2001

- D. 3M Corporation
 - 1. Fire Barrier Caulk, CP-25WB
 - 2. Fire Barrier MPS-2 Putty and 4S Putty Pads
 - 3. Fire Barrier Intumescent Wrap Strip #FS-195

- E. Nelson Firestop Products
 - 1. FSP Firestop Putty
 - 2. CMP Firestop Compound
 - 3. CLK Firestop Sealant
 - 4. PLW intumescent Pillow
 - 5. PCS Preformed Collar for Plastic Pipe Penetrations
 - 6. MPS Multi-Plug
 - 7. MCT Multi-Cable Transit
 - 8. EMCT Multi-Cable Transit and Plug
 - 9. CTG Firestop Coating
 - 10. CPS Composite Sheet

- F. Tremco, Inc.
 - 1. Fyre-Sil and Fyre-Sil SL
 - 2. Fyre-Shield
 - 3. THC-900/901
 - 4. Dymeric, Dymonic Sealant Systems
 - 5. Compatible forming systems.

- G. General Electric
 - 1. Pensil 100 Sealant
 - 2. Pensil 200 Foam
 - 3. Pensil 300 Joint Sealant
 - 4. Pensil 500 Putty
 - 5. Compatible forming systems.

- H. U.S. Gypsum Company
 - 1. U.S.G. "Thermafiber" unfaced safining insulation with third party wrap, 3.5 pcf density, UL R-10905 label.
 - 2. U.S.G. "Firecode" compound.

- I. Hilti Corporation
 - 1. Hilti CP 645 insulated firestop sleeve to replace existing pipe insulation

2.02 ACCESSORY ELEMENTS

- A. Forming, damming materials shall be mineral fiber board or other suitable material recommended by nominated system manufacturer.

- B. Primers, sealant and solvent cleaners shall be as recommended by the nominated system manufacturer.
- C. Metal Systems – 20 gauge phosphatized, electrogalvanized steel plate or galvanized steel clips.

PART 3 – EXECUTION

3.01 INSPECTION AND ACCEPTANCE

- A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the work of this contract, any defects affecting installation.
- B. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 PREPARATION

- A. The surface shall be dry, clean, and free of all foreign matter.
- B. Do not apply firestopping to surfaces previously painted or treated with a sealer, curing compound, water repellent or other coatings unless tests have been performed to ensure compatibility of materials.
- C. Provide primers as required which conform to manufacturer's recommendations for various substrates and conditions.
- D. Mask where necessary to protect adjoining surfaces.
- E. Remove excess material and stains on surfaces as required.

3.03 INSTALLATION – GENERAL SYSTEMS

- A. Install in strict accordance with manufacturer's printed instructions.
- B. Ensure that anchoring devices, backup materials, clips, sleeves, supports and other materials used in the actual fire test are installed.
- C. Install firestopping with sufficient pressure to properly fill and seal openings to ensure an effective smoke seal.
- D. Tool or trowel exposed surfaces. Remove excess firestop material promptly as work progresses and upon completion.
- E. Install dams when required to properly contain firestopping materials within openings and as required to achieve required fire resistance ratings. Combustible damming materials must be removed after appropriate curing. Incombustible damming materials may be left as a permanent component of the firestopping systems.

3.04 FIRESTOPPING CONSTRUCTION AT BUILDING EXTERIOR PERIMETERS, INTERIOR WALLS, SHAFTS, ETC.

- A. Install material of proper size on continuous plates or clips as required for proper support in order to safe-off area between exterior walls, interior walls and shafts and floor slabs, said walls and roof areas leaving NO VOIDS.
- B. Firestopping is required at all juncture conditions whether or not clips, angles or other structural elements exist either intermittently or continuously.
- C. Attach plates and clips to floor levels and other breaks and extend through framing to sheathing or other solid strata.
- D. Where metal decking flutes, either parallel or perpendicular to walls, occur and are open, same shall be fully packed and sealed with proper firestopping system.
- E. Where firestopping is accomplished after installation of drywall or other applied sheet finish, all spaces between penetrations and finish shall be filled to the thickness of said sheet finish with intumescent caulk.
- F. At all linear openings, fill voids with a minimum of 6 inches of minimum 3.5 lb./cu. ft. density safing insulation as specified in Part 2 herein and cover entire surface with UL listed firestop sealant of one of nominated manufacturers identified in Part 2 herein.

3.05 PENETRATION SEALS

- A. Penetrations are defined as conduits, cables, wires, piping, ducts or other elements passing through one through one or both outer surfaces of fire rated walls, floors or partitions and shall be firestopped on both sides of penetration in accordance with requirements set forth in Paragraph 1.04 of this Section.
- B. Where sleeves are used, same shall be as specified in Part 2 herein; in event that sleeves are not used, core openings and caulk penetrating items with intumescent system the full length of penetration and seal on both sides with intumescent caulk.
- C. Residual openings within square or rectangular holes shall be filled with compounds applicable for substrate encountered and all penetrations sealed on both sides with caulk.
- D. Where existing pipes penetrate new partition, replace existing pipe insulation with new insulated firestop sleeve and seal perimeter of remaining opening on both sides with caulk.

3.06 FIELD QUALITY CONTROL

- A. Contractor shall immediately notify the Architect if the firestopping systems herein specified cannot meet the requirements of the specification.
- B. Contractor shall examine firestops to ensure proper installation and full compliance with this specification.
- C. All areas of work must be accessible until inspection by the applicable code authorities.

- D. Correct unacceptable firestops and provide additional inspection to verify compliance with this specification at no additional cost.

3.07 CLEANING

- A. When finished work will be visible, clean adjacent surfaces in accordance with manufacturer's printed instructions.
- B. If visible in the finished work, remove temporary dams after initial cure of firestops.
- C. Correct staining and discoloring on adjacent surfaces.
- D. Remove all debris and excess materials entirely from site and leave work in a neat and clean condition.

END OF SECTION

SECTION 07 92 13

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Silicone joint sealants.
- 2. Urethane joint sealants.
- 3. Acoustical joint sealants.

- B. Related Sections:

- 1. Division 09 Section "Gypsum Board" for sealing perimeter joints.
- 2. Division 09 Section "Tiling" for sealing tile joints.

1.3 PRECONSTRUCTION TESTING

- A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

- 1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- 2. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.

- B. Product Data: For each joint-sealant product indicated.

- C. Sustainable Building Material Submittal:

- 1. Product Data for sealants and sealant primers used inside the weatherproofing system, including printed statement of VOC content.

- D. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

- E. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.
- F. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- H. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.
- C. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.

1.6 PROJECT CONDITIONS

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

1.7 WARRANTY

- A. Warranty Period: Two years from date of Substantial Completion. Provide under the provisions of Section 01 78 00.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers as listed below

- B. Substitutions: Under provisions of Section 01 60 00.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full standard range.

2.3 SILICONE JOINT SEALANTS

- A. Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 786 Mildew Resistant.
 - b. GE Advanced Materials - Silicones; Sanitary SCS1700.
 - c. Tremco Incorporated; Tremsil200 Sanitary.

2.4 URETHANE JOINT SEALANTS

- A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
Products: Subject to compliance with requirements, provide one of the following:
 - a. Pecora Corporation; Dynatroll-XL.
 - b. Sika Corporation, Construction Products Division; Sikaflex - 1a.
 - c. Tremco Incorporated; Dymonic 100

2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Pecora Corporation; AC-20 FTR.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.

2.6 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings Rods: ASTM C 1330, Type C, Closed Cell, provide backing rods of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form-release agents from concrete.

4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

- G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written recommendations.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.
- B. Clean under provisions of Section 01 70 00.

3.5 PROTECTION

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

3.6 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints.
 - d. Vertical joints on exposed surfaces of interior unit masonry, concrete walls and partitions.
 - e. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
 - f. Openings around all penetrations through partitions and perimeter of partitions designated as smoke partitions.
 - g. Other joints as indicated.
 - 2. Urethane Joint Sealant: Single component, nonsag, Class 35
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full standard range.
- B. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Sealant Location:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated.
 - 2. Joint Sealant: Mildew resistant, single component, nonsag, mildew resistant, acid curing.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full standard range.
- C. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Control and expansion joints in unit masonry.

- b. Joints between different materials listed above.
 - c. Perimeter joints between materials listed above and frames of doors, windows and louvers.
 - d. Control and expansion joints.
 - e. Other joints as indicated.
 2. Silicone Joint Sealant: Single component, Type S, Grade NS, Class 50.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full standard range.

- D. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Location:
 - a. Acoustical joints where indicated.
 - b. Other joints as indicated.
 2. Joint Sealant: Acoustical
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full standard range.

END OF SECTION

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SECTION 08 12 13

STEEL DOOR FRAMES

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.02 WORK INCLUDED

- A. Steel door frames.

1.03 RELATED WORK

- A. Section 08 13 13 - Steel Doors
- B. Section 08 71 00 – Door Hardware
- C. Section 08 81 00 - Glass and Glazing
- D. Section 09 91 00 - Painting: Field painting of frames.
- E. Division 4 - Masonry: Mortar fill of metal frames.

1.04 REFERENCES

- A. DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- B. ANSI/SDI-100 - Standard Steel Doors and Frames
- C. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
- D. ASTM - E152 - Methods of fire tests of door assemblies.
- E. NFPA 252 - Fire tests of door assemblies.
- F. UL 10B - Fire Tests of door assemblies.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of the DHI, SDI-100, and ANSI/SDI-A250.11.
- B. Fire rated door frames are to also conform to the requirements of NFPA 252 ASTM E152 and UL10B.

1.06 REGULATORY REQUIREMENTS

- A. Conform to State Building Code and State Fire Code.

1.07 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01 33 00.
- B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
- C. Submit manufacturer's installation instructions under provisions of Section 01 33 00.
- D. Sustainable Design Submittal:
 - 1. Provide documentation indicating percentages of post-consumer and pre-consumer recycled content.
 - 2. Identify each regional material along with the location of its harvest, extraction, or manufacture.

1.08 DELIVERY, STORAGE AND PROTECTION

- A. Protect products under provisions of Section 01 60 00.
- B. Protect frames with resilient packaging sealed with heat shrunk plastic.
- C. Break seal on-site to permit ventilation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Steelcraft
- B. Other acceptable manufacturers offering equivalent products.
 - 1. Ceco Door
 - 2. De La Fontaine
 - 3. Curries
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 METAL FRAMES

- A. TYPES
 - 1. Exterior frames: Steelcraft Model F14-4 (14 gage galvanized steel with 2" face for 1-3/4" doors)
 - 2. Interior frames: Steelcraft Model F16-4 (16 gage cold rolled steel with 2" face for 1-3/4" doors.)

B. FABRICATION

1. All frames in new partitions shall be furnished as a welded unit with mitered corners. Miter and entire connection is to be continuous fully welded. Welds are ground and finished smooth.
2. Knocked-down field assembly frames may only be used at existing drywall and interior masonry partitions.
3. Fabricate frames with hardware reinforcement plates welded in place as required to coordinate with hardware schedule. Provide mortar guard boxes, 22 gage.
4. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.
5. Prepare frame for silencers. Provide three single rubber silencers for single doors on strike side, and two single silencers on frame head at double doors without mullions.
6. Fabricate frames for masonry wall coursing with a 4 inch head member (unless indicated otherwise).
7. Frames shall be furnished with a minimum of six wall anchors and two base anchors of manufacturer's standard design. Jamb anchors shall be as required to coordinate with the adjacent wall construction.
8. All fire rated frames shall carry a UL label.
9. Provide a temporary spreader bar securely fastened to the bottom of each frame.
10. The inside profile of all frames to be filled with mortar shall be coated with bituminous coating to a thickness of 1/16 inch. Coating may be field applied.
11. Cold-rolled steel frame material is to contain a minimum of 20 % Pre-Consumer recycled content and 45% Post-Consumer recycled content.
Galvanized steel frame material is to contain a minimum of 5 % Pre-Consumer recycled content and 20% Post-Consumer recycled content.
12. Anchors
 - a. Quantity: Minimum 3 anchors per jamb.
 - b. Jambs over 8'-0" in height: 1 additional anchor for each 2'-0" or fraction thereof.
 - c. Construction: 18-gage steel strap or 3/16" diameter wire, adjustable or "T" shaped.
 - d. Floor anchors: Welded inside each jamb. Up to 2 inch adjustable permitted subject to compliance with standards.

2.03 FINISH

- A. After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities.
- B. Frames shall be thoroughly cleaned and phosphatized.
- C. All surfaces exposed to view shall receive a factory applied single coat of rust inhibiting prime paint baked-on in accordance with ANSI A224,1.
- D. The finish coats of paint shall be field applied by others in accordance with the painting section of these specifications.

- E. Where wall anchors utilizing exposed screw heads are used to install door frames, the exposed screws are to be covered with epoxy resin filler (Bondo or equal) and sanded smooth to match flush with the surrounding face.

PART 3 - EXECUTION

3.01 INSTALLATION OF FRAMES

- A. Install frames in accordance with ANSI/SDI A250.11.
- B. Install the frames plumb, rigid, and in true alignment and fasten them so as to retain their position.
- C. All frames in new masonry walls shall be filled with mortar as they are laid-up. Also, the CMU hollow core nearest the new door frame is to be filled solid with grout full height of masonry opening. Coordinate with door frame's wall anchors.
- D. Coordinate with masonry wall construction for anchor placement.

3.02 REPAIR EXISTING METAL FRAMES

- A. Where hinges are removed from existing metal door frames scheduled to remain and where noted on the drawings, the rabbets in the frame are to be filled with epoxy resin filler (Bondo or equal) and sanded smooth to match flush with the surrounding face. Entire frame is to be painted.

3.02 CLEANING

- A. Clean in accordance with Section 01 70 00.

END OF SECTION

SECTION 08 13 13

STEEL DOORS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Steel doors.

1.02 RELATED WORK

- A. Section 08 12 13 - Steel Door Frames
- B. Section 08 71 00 – Door Hardware
- C. Section 08 71 50 – Weatherstripping
- D. Section 08 81 00 – Glass and Glazing
- E. Section 09 91 00 - Painting: Field painting of doors and frames.

1.03 REFERENCES

- A. DHI - Door Hardware Institute: The Installation of commercial steel doors and steel frames, insulated steel doors in wood frames and builder's hardware.
- B. ANSI/SDI-100 - Standard Steel Doors and Frames
- C. ASTM E152 - Methods of Fire Tests of Door Assemblies
- D. UL 10B - fire Tests of Door Assemblies
- E. NFPA - 80 - Fire Doors and Windows
- F. NFPA - 252 - Fire Tests for Door Assemblies

1.04 QUALITY ASSURANCE

- A. Conform to requirements of SDI-100.
- B. Fire rated door and frame construction to conform to ASTM E152, NFPA 80, NFPA 252, and UL 10B.

1.05 REGULATORY REQUIREMENTS

- A. Conform to State Building Code and State Fire Code for fire rated frames and doors.

1.06 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01 31 00.
- B. Indicate door elevations, internal reinforcement, closure method, and cut outs for glazing.
- C. Submit manufacturer's installation instructions under provisions of Section 01 33 00.
- D. Sustainable Design Submittal:
 - 1. Provide documentation indicating percentages of post-consumer and pre-consumer recycled content.
 - 2. Identify each regional material along with the location of its harvest, extraction, or manufacture.

1.07 DELIVERY, STORAGE AND PROTECTION

- A. Protect products under provisions of Section 01 60 00.
- B. Protect doors with resilient packaging sealed with heat shrunk plastic.
- C. Break seal on-site to permit ventilation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis of design: Steelcraft
- B. Other acceptable manufacturers offering equivalent products.
 - 1. Ceco Door
 - 2. De La Fontaine
 - 3. Curries
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 HOLLOW METAL DOORS

- A. TYPES
 - 1. Interior doors: Rated and non-rated SDI Grade II, heavy duty, Model 2 (seamless and 18 gage) (Steelcraft LW door series)
Rated doors shall be as follows:
 - 1-1/2 hr. rating
 - 3/4 hr. rating
 - 2. Exterior doors: SDI Grade III, extra heavy duty, Model 2 (seamless and 16 gage) (Steelcraft LW door series)

B. MATERIALS

1. Interior fire rated doors:
 - a. Faces: 18 gage, cold rolled steel conforming to ASTM A-366-68
 - b. Perimeter channels to be 16 gage and welded to panels
 - c. Core to be honeycomb.
 - d. All fire rated doors shall carry a UL label.
2. Interior non-rated doors:
 - a. Faces: 18 gage, cold rolled steel conforming to ASTM A-366-68
 - b. Perimeter channels to be 16 gage and welded to panels
 - c. Core to be honeycomb.
3. Exterior doors:
 - a. Faces: 16 gage, A60 galvanized steel in accordance with ASTM A525. (A60 coating is .6 oz. of zinc per square foot of steel total coverage)
 - b. Channels to be 16 gage and perimeter welded to panels.
 - c. Core shall be foamed-in-place polyurethane insulation, "R" factor 11.1, compression strength 3600 PSI.
 - d. Top cap required.

C. FABRICATION

1. All doors shall be custom made, of the types and sizes shown on approved shop drawings, and shall be fully welded seamless construction with no visible seams or joints on their faces or vertical edges. Inverted end channel on bottom welded to both face sheets. Door thickness shall be 1-3/4" unless noted otherwise.
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 gage of metal used.
3. Door faces shall be joined at their vertical edges by a continuous weld extending the full height of the door seam. All such welds shall be ground and smoothed to make them invisible and provide a smooth flush surface.
4. The vertical edge profiles on single acting swing doors shall be beveled 1/8" in 2".
5. All hardware furnished by the hardware contractor for single-acting doors shall be designed for beveled edges as specified above.
6. Hardware reinforcements:
 - a. Doors shall be mortised, reinforced, drilled and tapped at the factory for fully templated hardware in accordance with the approved hardware schedule and templates provided by the hardware contractor. Where surface-mounted hardware (or hardware, the interrelation of which is to be adjusted upon installation-such as top and bottom pivots, floor closers, etc.) is to be applied, doors shall have reinforcing plates only: all drilling and tapping shall be done by the installer.
 - b. Minimum gages for hardware reinforcing plates shall be as follows:

1. Hinge and pivot reinforcements 7 gage.
 2. Concealed or surface mounted closers - 14 gage.
 3. Lock face, flush bolts and all other surface mounted hardware - 16 gage.
7. Cold-rolled steel door material is to contain a minimum of 20 % Pre-Consumer recycled content and 45% Post-Consumer recycled content.
Galvanized steel door material is to contain a minimum of 5 % Pre-Consumer recycled content and 20% Post-Consumer recycled content.

D. ACCESSORIES

1. Glass mouldings and stops:
 - a. Where specified or scheduled, doors shall be provided with hollow metal mouldings to secure glazing by others in accordance with glass opening sizes and glass type shown on approved shop drawings.
 - b. Fixed mouldings shall be securely welded to the door on the security side.
 - c. Loose stops shall be not less than 20 gage steel, with mitered corner joints, secured to the framed opening by cadium or zinc-coated countersunk screws. Snap-on attachments will not be permitted.

2.04 FINISH

- A. After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities.
- B. Doors shall be thoroughly cleaned and phosphatized.
- C. All surfaces exposed to view shall receive a factory applied single coat of rust inhibiting prime paint baked-on in accordance with ANSI A224,1.
- D. The finish coats of paint shall be field applied by others in accordance with the painting section of these specifications.

PART 3 - EXECUTION

3.01 INSTALLATION OF DOORS

- A. Install doors in accordance with DHI.
- B. Install doors plumb and in true alignment in a prepared opening and fasten them to achieve the maximum operational effectiveness and appearance.

3.02 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.
- B. Clearances:

Provide 1/8 inch at heads, jambs, and between pairs of doors.

Provide 3/4 inch maximum from bottom of door to top of decorative floor finish or covering unless otherwise indicated.

- C. Install fire-rated doors according to NFPA 80. Install smoke- and draft-control doors according to NFPA 105. All doors that are smoke doors or fire rated and are being installed in new frames are to be sized as required to meet the code requirement clearances around the perimeter between the door, meeting edges of door pairs, finish floor and the frame.
- D. All doors that are smoke doors or fire rated and are being installed in existing frames are to be adjusted or shimmed as required to meet the code requirement clearances around the perimeter between the door, meeting edges of door pairs, finish floor and the frame.

3.03 ADJUSTING AND CLEANING

- A. Adjust hardware for smooth and balanced door movement.
- B. Clean in accordance with Section 01 70 00.

END OF SECTION

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SECTION 08 42 50

ALUMINUM ENTRANCE DOORS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Furnish and install aluminum entrance, entrance door frames complete with hardware, and related components as shown on the drawings and specified in this section.
- B. Glass and Glazing
 - 1. Reference Section 08 81 00 for Glass and Glazing.

1.02 RELATED WORK

- A. Section 08 43 13 – Aluminum Storefront System
- C. Section 08 81 00 – Glass and Glazing

1.03 ITEMS INSTALLED BUT NOT FURNISHED

- A. Structural support of the framing, wood framing and structural steel.

1.04 TESTING AND PERFORMANCE REQUIREMENTS

- A. Test Units
 - 1. Air test unit shall be minimum size of 3'-0" x 7'-0".
- B. Test Procedures and Performances
 - 1. Entrance doors shall conform to all requirements for the door type specified. In addition, the following specific performance requirements shall be met.
 - 2. Air Infiltration Test
 - a. With door closed and locked, test unit in accordance with ASTM E 283 at a static air pressure difference of 1.57 psf.
 - b. Air infiltration shall not exceed .50 cfm per foot of perimeter crack length for single doors.
 - c. Air infiltration shall not exceed .10 cfm per foot of perimeter crack length for a pair of doors.
 - 3. Project Wind Load
 - a. The window system must meet the state requirements for the basic 146 mph wind speed zone.

1.05 QUALITY ASSURANCE

- A. Provide test reports from laboratories certifying the performance as specified.
- B. Test reports shall be accompanied by the entrance door manufacturer's letter of certification stating that the tested door meets or exceeds the referenced performance standard for the appropriate door type.

1.06 QUALIFICATIONS

- A. Manufacturer and installer must have specialized in performing the work of this section with a minimum of five (5) years documented experience. Installer must be approved by the manufacturer.

1.07 REGULATORY REQUIREMENTS

- A. Conform to all Federal, State, and Local Codes.

1.08 SUBMITTALS

- A. Submit shop drawings, manufacturer's installation instructions, product data and finish samples under provisions of Section 01 33 00.
- B. Indicate frame configuration, anchor types and spacings, reinforcements, and finish.
- C. Indicate door elevations, closure method, glazing connection, and all accessories.
- D. Provide returnable sample as required by the Architect.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Protect products under provisions of Section 01 60 00.

1.10 WARRANTIES

- A. Total Entrance Door / Storefront System
 - 1. Provide warranty under provisions of Section 01 78 00.
 - 2. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total entrance door installation which includes that of the doors, hardware, glass (including insulated units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air and structural adequacy as called for in the specifications and approved shop drawings.
 - 3. Any deficiencies due to such elements not meeting the specifications shall be corrected by the responsible contractor at his expense during the warranty period.
- B. Provide written warranty stating organic coating finish will be free from fading more than 10%, chalking, peeling, chipping, or cracking for 15 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. All doors shall be EFCO Series D518 DuraStile Wide Stile Entrance Door.
- B. Other acceptable manufacturers offering equivalent products.
 - 1. Kawneer
 - 2. YKK AP America, Inc.
- C. Substitutions: not allowed.

2.02 MATERIALS

- A. Aluminum
 - 1. Extruded aluminum shall be 6063-T6 alloy and temper.
- B. Fasteners
 - 1. All exposed fasteners shall be aluminum or stainless steel.

2.03 FABRICATION

- A. General
 - 1. Major portions of the door sections shall have .188" wall thickness. Glazing stop sections shall have .050" wall thickness.
- B. Entrance Doors
 - 1. Door stiles shall be no less than 5" wide (not including glass stops).
 - 2. Bottom rail of door shall be no less than 10" (not including glass stops).
 - 2. Door stiles and rails shall have hairline joints at corners. Heavy concealed reinforcement brackets shall be secured with screws and shall be of deep penetration and fillet welded.
 - 3. Weather stripping shall be wool pile and shall be installed in one stile of door pairs and in jamb stiles of center pivoted doors.
- C. Door stops shall include EPDM bulb weather stripping.
- D. Glazing
 - 1. All units shall be dry glazed with extruded pressure fitting aluminum glazing stops, and EPDM gasket unless noted otherwise in the glass specification section.
 - 2. Glazing shall be glass as specified in Section 08 81 00.
- E. Door Frame (where occurring)
 - 1. Depth of frame shall not be less than 4 1/2".
 - 2. Face dimension shall not be less than 2".
 - 3. Frame components shall have .188" wall thickness.
 - 4. Shear block construction shall be utilized throughout.
 - 5. System design shall be such that raw edges will not be visible at joints.
- F. Insulated Aluminum (Opaque) Panel
 - 1. See Specification Section 08 88 60 - Insulated Metal Glazing Panels
- G. Finish
 - 1. Organic
 - a. Finish all exposed areas of aluminum doors and components with AA-M12-C42-R1X, 70% PVDF Ultrapon meeting AAMA 2605.
 - b. Color shall be as selected by Architect from manufacturer's standard colors.

2.04 HARDWARE

- A. Exterior Doors:
1. All doors shall be equipped with a concealed vertical rod exit device with the release mechanism contained in a 7" mid-rail. The release mechanism shall be clearly marked, with the word "PUSH" but shall not extend more than 1" beyond the plane of the door in the unactivated position. Doors shall have an Ultraline 9" center-to-center offset pull handle on the exterior. Provide key cylinder dog-down.
 2. Provide an electrified latch retraction system for a concealed vertical rod exit device as required for the remote unlocking of one door leaf at the main entrance.
 - Provide interior remote push button release operator with LED to indicate status of lock in the School Main Office room 133. Verify exact location with Architect.
 - Also connect with existing Owner-provided card reader security system as required to operate the electrified latch retraction system on one door.
 - Provide and install all wiring and power supplies or transformers as required for a complete operating system.
 - Remove and dispose of the existing electromagnetic lock and associated interior push button.
- B. Interior Vestibule Doors:
1. Interior vestibule doors are to be Push/Pull.
Doors shall have an Ultraline Push/Pull set with a 9" center-to-center offset pull handle on the exterior and a horizontal 1" diameter solid wire push bar on the interior, full width of the door.
- C. Hinges to be full height continuous Roton Model 780-112 HD or equal. Finish to match door.
- D. Closers to be standard manufacturer's concealed type with a limiting stop and a hold open. Closer must meet the state code for opening force and swing position.
- E. Provide standard weatherstripping on exterior doors. See Section 08 71 50 for sweep and threshold.

PART 3 EXECUTION

3.01 INSPECTION

- A. Job Conditions
1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface and are in accordance with approved shop drawings.

3.02 INSTALLATION

- A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.
- B. Plumb and align entrance door faces in a single plane for each wall plane and erect doors and materials square and true. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.
- C. Adjust doors for proper operation after installation.
- D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters. Wipe off excess material and leave all exposed surfaces and joints clean and smooth.

3.03 CLEANING

- A. Entrance doors shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc.
- B. The Contractor shall be responsible for thoroughly cleaning all aluminum (existing and new), employing methods recommended by the manufacturer as follows: Anodized aluminum shall be cleaned with plain water containing a mild detergent, or a petroleum product such as white gasoline, kerosene, or distillate. No abrasive agent shall be used.
- C. Glass shall be cleaned thoroughly.

3.04 PROTECTION OF FINISHED WORK

- A. Protect finished work under provisions of Section 01 70 00.

END OF SECTION

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SECTION 08 43 13

ALUMINUM STOREFRONT SYSTEM
(Hurricane Resistant)

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Furnish and install aluminum hurricane resistant architectural storefront system complete with hardware and related components as shown on drawings and specified in this section.

1.02 RELATED WORK

- A. Section 08 42 50 – Aluminum Entrance doors
- B. Section 08 81 00 – Glass and Glazing
- C. Section 07 92 13 - Joint Sealants

1.03 REFERENCES

- A. AAMA - American Architectural Manufacturer's Association.
- B. ASTM - American Society for Testing and Materials.

1.04 TESTING AND PERFORMANCE REQUIREMENTS

- A. Provision for Thermal Movements
 - 1. Storefront framing systems shall be designed to provide for thermal movement of all component materials resulting from a surface temperature change of 180 degrees F without causing buckling, stresses on glass, failure of joint seals, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or other detrimental effects. Operating doors shall function normally over this temperature range.
- B. Test Units
 - 1. Air, water, and structural test unit size shall be a minimum of two lites high and three lites wide.
 - 2. Thermal test unit sizes shall be 80" (2032 mm) wide x 80" (2032 mm) high with one intermediate vertical mullion and two lites of glass.
- C. Test Procedures and Performance
 - 1. Air Infiltration Test
 - a. Test unit in accordance with ASTM E 283 at a static air pressure difference of 6.24 psf (299 Pa).
 - b. Air infiltration shall not exceed .06 cfm/SF (.30 l/s•m²) of unit.
 - 2. Water Resistance Test
 - a. Test unit in accordance with ASTM E 331.
 - b. There shall be no uncontrolled water leakage at a static test pressure of 12.0 psf (575 Pa).

3. Uniform Load Deflection Test
 - a. Test in accordance with ASTM E 330.
 - b. Deflection under design load shall not exceed $L/175$ of the clear span.
 4. Uniform Load Structural Test
 - a. Test in accordance with ASTM E 330 at a pressure 1.5 times the denoted design wind pressure.
 - b. At conclusion of the test, there shall be no glass breakage, permanent damage to fasteners, storefront parts, or any other damage that would cause the storefront to be defective.
 5. Condensation Resistance Test (CRF)
 - a. Test unit in accordance with AAMA 1503.1.
 - b. Condensation Resistance Factor (CRF) shall not be less than 59.
- D. Project Wind Load
1. The window system must meet the state requirements for the basic 139 mph wind speed zone.
- E. Additional test criteria for large missile impact
1. Large Missile Level (D) Impact Test conducted on test units in accordance with TAS 201 or ASTM E 1886/E 1996. Upon completion of the missile impact tests, the test units shall be tested in accordance with TAS 203 or ASTM E 1996 cyclic load test.
- F. National Fenestration Rating Council (NFRC)
1. NFRC 100; Procedure for Determining Fenestration Thermal Properties:
The conductive thermal transmittance (U-Factor) shall not be more than 0.38 BTU/hr/sf/°F when glazed with 1" insulated – 1/4" clear, 1/2" air, 1/4" clear low emissivity glass.
 2. NFRC 200; Solar Heat Gain Coefficient and Visible Transmittance:
Solar Heat Gain Coefficient (SHGC): 0.40

1.05 ENGINEERING REQUIREMENTS

- A. Systems shall be engineered to the following requirements and evidence, in the form of drawings and calculations, shall be delivered to the Architect for approval. All calculations and drawings shall be approved and stamped by a registered engineer.
1. Storefront framing members are to be designed to withstand 30 psf positive and 30 psf negative wind loads up to and including a 50 foot height above ground and increasing acting normal to plane of wall.
 2. Wall so constructed as to provide for such expansion and/or contraction of component materials as will be caused by an ambient temperature range of 140 degrees f. without causing harmful buckling, failure of joint seals, and undue stress on fasteners or other detrimental effects.
 3. The calculated deflection of any metal framing member in a directional normal to the plane of the wall shall not exceed $1/175$ 'th of it's clear span or 3/4 inch, whichever is less, except that when a finished plaster type surface is affected, the deflection shall not exceed $1/360$ 'th of the span.
- B. Design, engineer, fabricate and install the storefront system to withstand the effects of wind loading specified with no material failures or permanent deformation of structural members.

- C. Structural test pressure shall be equal to 150 percent of the inward and outward acting design wind pressures.

1.06 QUALITY ASSURANCE

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified.
- B. Test reports shall be accompanied by the storefront manufacturer's letter of certification stating that the tested storefront meets or exceeds the referenced criteria for the appropriate storefront type.

1.07 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Contractor shall submit shop drawings; finish samples, test reports, and warranties.
 - 1. Samples of materials as may be requested without cost to owner, i.e., metal, glass, fasteners, anchors, frame sections, mullion section, corner section, etc.
- C. An NFRC Component Modeling Approach (CMA) generated label certificate shall be provided by the manufacturer. The label certificate shall be project specific and will contain the thermal performance ratings of the manufacturer's framing combined with the specified glass, and the glass spacer used in the fabrication of the glass, at NFRC standard test size as defined in table 4-3 in NFRC 100-2010.

1.08 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing aluminum storefront systems with minimum five years of experience.
- B. Installer: A commercial glazer with not less than five years of experience installing similar glazing systems and approved by the system manufacturer.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Accept storefront units on site in original cartons. Inspect for damage.
- C. Protect storefront units from damage by other trades and damage to finish.

1.10 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.11 WARRANTY

- A. Total Storefront Installation
 - 1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total storefront installation. This includes the glass (including insulated units), glazing, anchorage and setting system, sealing, flashing, etc., as

- it relates to air, water and structural adequacy as called for in the specifications and approved shop drawings.
2. Any deficiencies due to such elements not meeting the specifications shall be corrected by the responsible contractor at their expense during the warranty period.
- B. Window Material and Workmanship
1. Provide written guarantee against defects in material and workmanship for ten (10) years from the date of final shipment.
- C. Glass
1. Provide written warranty for insulated glass units that they will be free from obstruction of vision as a result of dust or film formation on the internal glass surfaces caused by failure of the hermetic seal due to defects in material and workmanship.
 2. Warranty period shall be for 10 (ten) years.
- D. Finish
1. Warranty period shall be for fifteen (15) years from the date of final shipment.
 2. Provide organic finish warranty based on AAMA standard 2605.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. EFCO System 526T Thermal Impact Resistant Screw Spline Storefront.
- B. Other acceptable manufacturers offering equivalent products.
1. YKK AP America, Inc.
 2. Kawneer
- C. Substitutions: Not allowed.

2.02 MATERIALS

- A. Aluminum
1. Extruded aluminum shall be 6063-T6 alloy and tempered.
- B. Glass
1. See Specification Section 08 81 00 – Glass and Glazing
- C. Thermal Barrier
1. All exterior aluminum shall be separated from interior aluminum by a rigid, structural thermal barrier. For purposes of this specification, a structural thermal barrier is defined as a system that shall transfer shear during bending and, therefore, promote composite action between the exterior and interior extrusions.
 2. Barrier material shall be poured-in-place, two-part polyurethane. A nonstructural thermal barrier is unacceptable.

2.03 FABRICATION

- A. General
1. All aluminum frame extrusions shall have a minimum wall thickness of .080" (2 mm).

2. All exposed work shall be carefully matched to produce continuity of line and design with all joints. System design shall be such that raw edges will not be visible at joints.
- B. Frame
 1. Depth of frame shall not be less than 5" (127 mm).
 2. Face dimension shall not be less than 2 1/2" (63 mm).
 3. Frame components shall be screw spline construction.
 - C. Glazing
 1. All units shall be "dry glazed" with gaskets on both exterior and interior of the glass.
 - a. All units shall be glazed from the exterior. Inside or outside glazed available
 - D. Interior trim, closures, angles and the like shall be of sizes and shapes as shown with fastenings as required and/or specified. All snap-on design trim shall be in 0.062 inch minimum thickness. Trim shall connect to extruded aluminum anchors which shall permit the storefront to be anchored without the use of fasteners thru frame which may permit air or water leakage. Trim shall be of adequate size to cover all exposed areas and to preclude painting due to installation of new materials.
 - E. Exterior panning – aluminum, 0.078 inch thickness to cover all existing framing or areas as noted on drawings; one piece design to abut or interlock into frames without use of exposed fasteners; weathertight connection to allow for expansion and contraction.
- 2.04 FRAME FINISH
- A. Organic
 1. Liquid Fluoropolymer Aluminum Extrusion Coatings, AAMA 2605. Minimum 70 percent PVDF resin by weight, in color coat.
Color shall be as selected by Architect from manufacturer's full line of standard colors.

PART 3 EXECUTION

3.01 INSPECTION

- A. Job Conditions
 1. All openings shall be prepared by others to the proper size and shall be plumb, level and in the proper location and alignment as shown on the architect's drawings.

3.02 INSTALLATION

- A. Strictly comply with manufacturer's instructions and recommendations. Match profiles, sizes and spacings indicated on approved shop drawings. Do not perform structural silicone sealant work when the metal temperature is below 32 degrees F.
- B. Storefront system shall be erected plumb and true, in proper alignment and relation to established lines and grades.
- C. Entrance doors shall be securely anchored in place to a straight, plumb and level condition, without distortion. Weather stripping contact and hardware movement shall be checked and final adjustments made for proper operation and performance of units.

- D. Furnish and apply sealing materials to provide a weather tight installation at all joints and intersections and at opening perimeters.
- E. Sealing materials specified shall be used in strict accordance with the manufacturer's printed instructions, and shall be applied only by mechanics specially trained or experienced in their use. All surfaces must be clean and free of foreign matter before applying sealing materials. Sealing compounds shall be tooled to fill the joint and provide a smooth finished surface.
- F. Coordinate installation with adjacent work to ensure creation of a complete weatherproof assembly. Anchor work securely to supporting structure, but allow for differential and thermal movement.
- G. Isolate between aluminum and dissimilar metals with a protective coating or plastic strip to prevent electrolytic corrosion.
- H. Place interior seal around window perimeter to maintain continuity of building thermal and air barrier using insulating-foam sealant.
Great Stuff Pro Window and Door insulating foam sealant with minimal expansion (or equal).
NOTE: Verify that the use of this foam sealant does not void the warranty on the storefront system being installed.

3.03 ANCHORAGE

- A. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, specified wind loads, and cyclic reaction.
 - 1. Provide fasteners as recommended by the manufacturer for the type of substrate the storefront system is to be anchored.
- B. Hurricane impact storefront system may require supplemental anchorage to achieve compliance.

3.04 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.05 FIELD QUALITY CONTROL TESTING

- A. Testing Agency: Engage a qualified testing agency to perform field tests and inspections and prepare test reports.
 - 1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
- B. Testing Services: Testing and inspecting of installed storefront shall take place as follows:
 - 1. Testing Methodology: Testing Standard shall be per AAMA 502: *Voluntary Specification for Field Testing of Newly Installed Fenestration Products* including reference to ASTM E 1105 for Water Penetration Test.
 - a. Water Infiltration Test: Water penetration resistance tests shall be conducted in accordance with ASTM E 1105 at a static test pressure equal to 2/3 the specified water test pressure. No water penetration shall occur as defined in AAMA 502.

2. Testing Extent: A maximum of 10 percent of all installed storefront is to be tested. The Architect shall select window units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for water penetration with representatives from the manufacturer, Contractor and Owner or Architect present.
3. Test Reports: Shall be prepared according to AAMA 502.

3.06 PROTECTION AND CLEANING

- A. During installation, remove labels, part number markings, sealant smears, handprints, and construction dirt from all components.
- B. Touch-up damaged coatings and finishes and repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.
- C. Clean all exposed surfaces including metal and glass using non-abrasive materials and methods recommended by manufacturer of material or product being cleaned. Remove and replace work that cannot be successfully cleaned.
- D. The general contractor shall protect the aluminum materials and finish against damage from construction activities and harmful substances.
- E. A bi-annual sweetwater rinse is recommended to prohibit dirt, dust, and debris from accumulation on the surface of the coating and to help maintain the aesthetic of the coating.

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SECTION 08 51 13

ALUMINUM WINDOWS

PART 1 - GENERAL

1.01 GENERAL REFERENCES AND PROVISIONS

- A. The general conditions, Supplementary General Conditions & Division 1 of these specifications are hereby included as part of this section.
- B. Thoroughly examine all other Sections of the specifications for requirements which affect the work of this section, whether or not such work is specifically mentioned in this section.

1.02 DESCRIPTION OF WORK INCLUDED

- A. Material: new factory glazed, thermally broken, extruded side-opening aluminum emergency egress windows, together with all necessary mullions, trim, panning, operating hardware, installation hardware and all other accessories as required for a complete weather tight installation.
 - 1. Provide emergency egress window inserts, frame, panning, snap trim, mullions, muntins, extenders, and other brake formed, cut sheet and extruded aluminum products in conformance with applicable code and law, and best professional practice. Materials are to be aluminum and compatible metal hardware of sufficient strength to meet project design load as required by local codes.
- B. Removal from the site and legal disposal of all materials, debris, packaging, banding, and other materials and equipment.
- C. Sealing of all joints within window assemblies, (panning, receptors, trim etc.) and entire and interior perimeter(s) of new window units after installation.
- D. Make field observations and taking all field measurements of existing openings and conditions.
 - 1. Bidders shall survey job-site conditions and shall thoroughly familiarize themselves with the work of this contract and all site conditions prior to submitting a bid. Window contractor shall not be responsible for modifications to the building structure, or relocation of mechanical and electrical services which conflict with window locations.
 - 2. Bidders shall be responsible for field measurement. The dimensions shown on drawings are to be used as a guide and are not to be used for estimating or final measurements.
 - 3. Bidders shall be responsible for obtaining on site pull test data to ensure existing masonry and wood framing is of adequate strength and integrity to accommodate attachment of new window units in existing window frame openings. All areas deemed having insufficient strength, (rotted, crazed or spalled conditions) to attach new units to shall require additional new fasteners to attach to the existing window frame.

- E. Coordinating work with that of all other construction trades affecting or affected by the work of this section.

1.03 REFERENCES:

- A. American Architectural Manufacturers Association [AAMA].
- B. American National Standards Institute [ANSI].
- C. Aluminum Association. [AA].
- D. American Society for Testing & Materials [ASTM].
- E. Federal Specification or Federal Standard [FS].
- F. U.S. Department of Commerce [USDC].

1.04 QUALITY STANDARDS:

- A. Standards: Except as otherwise indicated, requirements for aluminum windows, terminology and standards of performance, and fabrication workmanship are those specified and recommended in AAMA/WDMA/CSA 101/I.S.2/A440-05 and applicable general recommendations published by AAMA.
 - 1. These performance requirements are to be met by ALL products according to the more stringent requirements in cases where there is redundant performance requirements stated in the AAMA specification, and in this specification.
 - 2. Provide complete certified current test reports from an AAMA certified independent testing facility verifying that the structural loading capabilities, infiltration testing, water resistance testing and thermal performance testing that meets or exceeds the following criteria. Test reports shall be no more than four (4) years old. Sample submitted for tests shall be of manufacturer's standard construction and at least 60" x 99" (36" x 71"). All windows shall bear label of "AAMA Certification Program" indicating conformance with AAMA 101/I.S.2/A440-05 & AAMA designation grade performance.
 - 3. All insulating glass units shall bear an "IGCC Certification Program" Level CBA label.
 - 4. All performance requirements as stated herein above are the minimum acceptable levels of performance and no products shall be deemed acceptable that do not meet these requirements.
- B. Consumer Product Safety Commission (CPSC): CPSC 16 CFR-1201, "Safety Standard for Architectural Glazing Materials".
- C. Glass Association of North America (GANNA): "Glazing Manual".
- D. Sealed Insulating Glass Manufacturer's Association (SIGMA) TM-3000 "Vertical Glazing Guidelines".
- E. Conform to all applicable Federal, State and local codes and laws.

1.05 PERFORMANCE REQUIREMENTS:

- A. All window work shall meet wind loading and deflection requirements of the State of Rhode Island as a minimum. Design, fabricate and install component parts so that completed frame and window installation will withstand the maximum inward and outward pressures allowed by Code measured in pounds per square foot (psf) normal to the plane of the wall.
- B. All windows shall be fabricated and installed to provide for expansion and contraction of the window over an ambient temperature range of 150° degrees Fahrenheit, without buckling, sealed joint failure, glass breakage, undue stress on members or anchors and other detrimental, including cosmetic failure.
- C. Maximum full load deflection normal to the wall plane for any member shall not exceed 1/175 of the clear span of the member, except as otherwise provided by code.
- D. Windows shall meet or exceed AAMA 101/I.S.2/A440-05 classification: HC-40(HC-50)
- E. Uniform Load Structural Test: Design and size members to withstand dead loads and live loads caused by pressure (positive/negative) of wind as calculated in accordance with ASTM E330 at 150 percent of the design pressure and Rhode Island Building Code. A minimum exterior and interior uniform load of 75 pounds per square foot (psf) and deflection no greater than L/175 shall be applied to the entire outside surface of the test unit. At the conclusion of the test there shall be no glass breakage, permanent damage of fasteners, hardware parts, support arms or any other damage causing the window to be inoperable. There shall be no permanent deformation of any frame or sash member in excess of 0.3 percent of its span.
- F. Air Infiltration Tests Hung: With sash in a closed and locked position, window shall be tested in accordance with ASTM E283 @ 1.6 psf (75 PA). Allowable air infiltration shall not exceed 0.04 cfm/ft. of operable sash joint.
- G. Water Resistance Tests: With the sash in a fully closed and locked position, window unit shall be tested in accordance with ASTM E331/ASTM E 547. There shall be no uncontrolled water leakage into the interior side of the window when subjected to a static air pressure difference of 7.52 psf (360 PA) & 10.0 psf.
- H. "U-Value": Provide unit in accordance with NFRC 100-2004, when combined area of window, shall have a thermal transmittance of not more than U-Value of 0.46 BTU/hr./sf/deg.F.
- I. Condensation Resistance Factor (CRF): Provide window in accordance with NFRC 500-2004 standards and tests of thermal performance with a CRF of 33 or better.
- J. Forced Entry Resistance: Window unit shall conform to AAMA 1302.5, ASTM F588-85 performance Level 10.

- K. Hurricane Impact Requirements
 - 1. Windborne-Debris-Impact-Resistance Performance: Shall be tested in accordance with ASTM E 1886 and information in ASTM E 1996 and TAS 201/203.
 - a. Large – Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade.

1.06 ENGINEERING REQUIREMENTS

- A. Systems shall be engineered to the following requirements and evidence, in the form of drawings and calculations, shall be delivered to the Architect for approval. All calculations and drawings shall be approved and stamped by a registered engineer.
 - 1. Window framing members are to be designed to withstand 30 psf positive and 30 psf negative wind loads up to and including a 50 foot height above ground and increasing acting normal to plane of wall.
 - 2. Window so constructed as to provide for such expansion and/or contraction of component materials as will be caused by an ambient temperature range of 140 degrees f. without causing harmful buckling, failure of joint seals, and undue stress on fasteners or other detrimental effects.
 - 3. The calculated deflection of any metal framing member in a directional normal to the plane of the wall shall not exceed 1/175'th of it's clear span or 3/4 inch, whichever is less, except that when a finished plaster type surface is affected, the deflection shall not exceed 1/360'th of the span.
- B. Design, engineer, fabricate and install the window system to withstand the effects of wind loading specified with no material failures or permanent deformation of structural members.
- C. Structural test pressure shall be equal to 150 percent of the inward and outward acting design wind pressures.

1.07 SUBMITTALS:

- A. Submit under provisions of Section 01 33 00.
- B. General Requirements: Provide submittals in compliance with the following.
 - 1. Product Data: Submit manufacturers specifications, standard details for window units, including profiles and dimensions of individual components. Data on hardware, accessories and finishes. Provide manufacturers certified test results for each type of window noted showing compliance with requirements herein.
 - 2. Shop Drawings: Submit complete shop drawings, to include location floor plans and/or exterior wall elevations denoting all window openings, typical unit elevations at 1/2 inch scale, and FULL scale section details of typical composite members including reinforcement and stiffeners. Show anchors, hardware, operators, receptors, subsills and other component not included in manufacturer's standard data. Include glazing details, instructions and standards for factory glazed units.
 - 3. Samples: Submit three (3) each of samples as follows:
 - a. Aluminum finish, color samples on 12 inch long section(s) of extrusion for Architect's approval representative of finish as required for window units.

- b. Samples of anchors, fasteners, hardware and other component parts as may be directed by Architect

1.08 PRODUCT DELIVERY, STORAGE & HANDLING:

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Materials will be delivered to the site in an undamaged condition. Use care in handling and hoisting windows during transportation and at job site. All window units and components to be stored out of contact with the ground under water tight cover (tarpaulins) or in storage trailer so as to prevent bending, warping or damage to windows.
- C. All damaged window units shall be removed from the site and replaced with new units at no additional cost to owner. All materials shall be new and of best quality. Materials shall be delivered and stored at site in sufficient quantity to allow continuity of the work.
- D. All materials shall be protected at all times from damage of any kind including breakage, scratches, dents, stains and deformation. No damaged materials shall be incorporated in any work. Protection during installation shall be responsibility of the contractor.

1.09 QUALITY ASSURANCE:

- A. Installer Qualification: Installer shall be experienced in every way with the complete installation of aluminum windows similar in material, design and size.
- B. Single source responsibility: Obtain aluminum windows from one source and by a single manufacturer.
- C. Mock-Up Unit(s): The Architect/Owner may require, prior to acceptance of the manufacturer and start by contractor, a sample window unit to be installed into a designated opening. Sample to be representative of standard production window unit. All costs associated with Mock-up unit to be included in contractor's base bid. Owner will not be liable for any and all costs associated with the installation of the mock-up in the event that the unit installed is not approved. Award of contract shall not be completed until successful completion of mock-up.
- D. Provide documentation showing window manufacturer has been in business producing similar type products for a minimum of ten (10) years.
- E. Provide evidence that window installer has been in business installing similar type products for a minimum of 5 years.

1.10 REGULATORY REQUIREMENTS

- A. Conform to all applicable Federal, State and Local codes and laws.

1.11 WARRANTIES:

- A. Provide a written, signed warranty from the window manufacturer agreeing to repair and/or replace any defective units or materials, to the satisfaction of and at NO cost to the Owner, which fail due to unsatisfactory materials or workmanship for a period of five (5) years from date of substantial completion. The warranty shall be for failure of the window including but not limited to water leakage, excessive air infiltration, excessive deflections, and faulty operation of sash or deterioration of the finish in excess of normal weathering and defects in hardware, weather-stripping and all other components of the completed product. The window manufacturers warranty will also provide coverage for all parts and labor necessary to correct, or replace all deficient or malfunctioning parts at no cost to Owner for a period of ten (10) years.
- B. Upon completion of the work and prior to acceptance of the work, the contractor shall provide to the Owner their own written warranty agreeing to repair and/or replace any window units which fail due to the improper installation within the first two (2) years after the date of substantial completion. In addition, the warranty shall also certify that the perimeter sealant(s) are suitable for each specific application and have been applied in accordance with the sealant manufacturer's recommendations for joint size, width, depth, priming, joint movement, weather conditions, bond breakers, etc. This warranty will cover all materials and labor to correct such failures.
- C. Provide additional written warranty from the window manufacturer agreeing to:
 - 1. Replace at no cost to Owner, any insulated glass unit which fails within ten (10) years resulting in condensation, fogging, misting or dust which appears on the #2 or #3 surfaces of the insulated glass unit, stress cracks, or coating deterioration, if applied.
 - 2. Replace at no cost to Owner, finish on window frames, parts and accessories which fails within Five (5) years due to defects including chipping, cracking, peeling or blistering.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

- A. Manufacturer: Diamond Windows & Doors Mfg., Boston, MA.
Series 8100 Casement window
- B. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS:

- A. Aluminum extrusions: All frame and sash sections shall be extruded aluminum shapes produced from commercial quality type 6063T5/T6 alloy, with a minimum wall thickness of .062" for window frame sill member and a minimum of .094" for all other members including frame and sash. Alloy and temper as recommended by window manufacture for strength, corrosion resistance and application of required finish, but not less than 22,000 psi ultimate tensile strength and minimum yield strength of 16,000 psi. Sash & Sash frame extrusions shall be tubular design.

Minimum frame depth shall be 3.25" or as required to coordinate with attachment to existing window system.

1. Miscellaneous Installation Accessories and Trim:
 - a. Mullions: Mullions, where indicated, shall be of extruded aluminum with a minimum wall thickness of .062", fastened with stainless steel fasteners, with aluminum snap cover trim where required to cover exposed fasteners.
 - b. Panning & Other Misc.: Panning & miscellaneous metal trim, caulk stops, sill extenders, closures and other necessary fillers shall be supplied, if indicated and called for, in roll formed 6063-T5 aluminum, with minimum .062" thickness for materials to receive finish to match window.
- B. Thermal Barrier: Fabricate window units with an integrally concealed low conductance thermal barrier. Material shall be pour-in-place, two part chemically curing structural polyurethane equal to PRC (Product Research and Chemical Corp.) PR-453M. The thermal barrier shall totally separate the interior from the exterior surfaces of all window parts, which are exposed, to the elements. No primary window parts, hardware or other appurtenances shall bridge the thermal barrier in any way. Snap together, pressed together or non-structural thermal barriers other than what has been specified will not be accepted. Thermal barrier shall be debrided toward the outside of the master frame or to the interior of the sash members to prevent continuing access to sharp debride edges.
- C. Fasteners: Aluminum, non-magnetic stainless steel or other material warranted by the window manufacturer to be non-corrosive and compatible with the aluminum window members trim, hardware, anchors, and other components of the window units. Do not use exposed fasteners except where unavoidable for application of operating hardware. Provide only exposed fasteners that match the finish of the window members and hardware being used. Exposed fasteners shall be Phillips flat-head screws.
- D. Anchors, Clips and Window Accessories: Depending on strength and corrosion inhibiting requirements fabricate accessories of aluminum, non-magnetic stainless steel or hot-dip zinc coated steel or iron complying with ASTM A386.
- E. Compression Glazing Gaskets & Weather-stripping: At the manufacturer's option, provide extruded neoprene gaskets complying with ASTM D2000 - 2BC415 to 3BC620.
- F. Window Assembly Sealant: Unless otherwise indicated for sealant required within the fabricated window units, use type recommended by the window manufacturer for joint size and movement, to remain permanently elastic, non-shrinking and non-migrating.
- G. Perimeter Weather Seals: Sealant for metal to metal contact surfaces of window members and related items and for sealing mechanical joints shall be one part silicone or polyurethane sealant. In all cases, use sealant color, which matches the finish of window when sealant is exposed to view. Use primers, back up material, bond breakers and cleaning agents as recommended by sealant manufacturer.
 1. Use of the following acceptable products or equal as approved by the Architect:
 - a. Tremco, "Dymonic"
 - b. GE (General Electric), "Silpruf"
 - c. Dow Corning, "795"

2.03 FABRICATION:

- A. General Requirements:
1. Finish, fabricate and shop assemble frame and sash into a complete window unit.
 2. Rigidly fit and secure joints and corners, accurately fit and secure corners tight. Make corner joints flush, hairline, and weatherproof. Seal all frame joints with epoxy back sealant meeting AAMA 803.3 specification for Narrow Joint Sealants.
 3. Prepare components with internal reinforcement for operating hardware.
 4. Prepare components to receive anchor devices. Fabricate anchorage items.
 5. Provide internal reinforcement in mullions with galvanized steel members to maintain rigidity.
- B. Frames: All windows shall have a minimum wall thickness of .062" at head and jambs and .094 at the sills.
1. Windows shall be of butt jointed coped and secured construction, fastened with stainless steel screws, anchored in integral screw bosses, epoxy back sealed at the corners with narrow joint sealant meeting AAMA 803.3 specifications.
- C. Operating Sash Hardware:
1. Locking handles shall be cam type and manufactured from a white bronze alloy with a US25D brushed finish.
 2. Provide a casement-type window with butt hinges and a single point lock. No insect screen.
Provide both a "Rescue" and "Escape" sticker adhered to glass of each Emergency Escape Window.
See drawings for locations.
Operating handle is to meet accessible code reach height.
- D All sash shall be interior glazed at factory with glazing as specified herein.
- E. Insect Screens: None required.
- F. Weather-stripping: Provide replaceable double weather-stripping around the entire perimeter of each sash, incorporating a silicone treated pile conforming to AAMA 701-92 with mylar fin bonded to a .270" backing. It shall be held in integral extruded ports and secured to prevent movement or loss while operating sash.
- G. Glazing beads: Sashes to be glazed with 7/8" sealed insulated glass and so constructed to allow for field replacement of glazing. Glazing shall be of type extruded aluminum snap in type glazing beads or putty style and Tremco EPDM poly-weg compression gasket on the interior of the glazing. Exterior of the glass shall be set on Tremco POLYshim II butyl glazing tape. The sealed insulated unit glass shall conform to S.I.G.M.A. standards for Level "A" performance when tested in accordance with ASTM E6P1 and ASTM E6P2.

2.04 RELATED MATERIALS:

- A. Fasteners: All screws, nuts, washers, bolts, rivets and other fastening devices incorporated in the work shall be of sufficient strength and quality to perform their designated function. Fasteners shall be made of the following approved materials;
- Aluminum
 - Non magnetic stainless steel
 - Corrosion resistant materials compatible with aluminum
 - Steel-Cadmium plated (ASTM A 165-80, Type OS)
 - Steel-Zinc Plated (ASTM B 633-78)
 - Steel-Nickel & Chrome Plated (ASTM B 456-79, Type SC)

2.05 FINISHES:

- A. Comply with the NAAMM “Metal Finishes Manual” for recommendations relative to application and designations of finishes.
- B. Polyvinylidene Fluoride (PVDF) Coating: AA-C12C42R1x (Chemical Finish cleaned with inhibited chemicals, Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment, Organic Coating, (as specified below). Prepare, pretreat and apply coating to exposed metal surfaces to comply with coating and resin manufacturer’s instructions.
1. Organic Coating: with resin containing 50% fluoropolymer; thermosetting; alternative finishes will not be acceptable.
 2. Quality standard: conforming to AAMA 2604, including 10 years Florida exposure and 4000 hours humidity tests.
 3. Pretreatment: five stage; zinc chromate conversion coating.
 4. Application: electrostatic spray and oven bake by approved applicator.
 5. Coating quantity: minimum one primer coat and one color coat.
 6. Dry film thickness: minimum 1.2 mils on exposed surfaces, except inside corners and channels.
- C. Color & Gloss: As selected by Architect from manufacturer’s full range (14 colors minimum) of choices for color & gloss.
The goal is to match the existing window frame color.

2.06 GLASS & GLAZING MATERIALS:

- A. Insulating Glass: Provide insulating glass units permanently marked either on spacers or at least one component light of units with certification label of the Insulating Glass Certification Council (IGCC); indicate class of glass
- B. Glass shall be 1” insulated (1/4” heat strengthened glass, airspace, 1/2” laminated glass with 0.1 polyvinyl butyral; Stormguard by Viracon or equal), impact resistant glazing for withstanding Large Missile Impact meeting ASTM E1996, hermetically sealed, low “E”, tinted, CBA rated and certified.
- Exterior pane of glass to be tinted. Gray tint. Shade of gray tint to be selected by Architect from manufacturer’s standards.

PART 3 - EXECUTION

3.01 PREPARATION AND INSPECTION:

- A. Carefully remove all applicable items of the existing window systems, including stops, mullions, screens, and trim as required for the proper installation of the new inserted window system. Avoid damage to the existing work that remains. No window shall be removed unless it can be replaced by the end of the workday. Existing window shall be removed and the new window installed in one continuous operation.
- B. Existing window items removed from the construction shall not be reused in the new installation.
 - 1. Existing windows, brackets, that are to be disposed of, hardware or other miscellaneous items within the immediate adjacent opening surfaces which affect the installation of the new replacement insert windows shall become the responsibility of the installation contractor who shall remove and legally dispose of same at no additional cost to the Owner.
- C. Verify openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION:

- A. The installation contractor and their representatives shall be totally responsible for the installation of the window units.
- B. Use only skilled tradesmen and complete all work in strict accordance with the manufacturer's specifications and recommendations for the installation of window units, hardware, operators and other components as well as the approved project shop drawings and these specifications.
- C. Set units plumb, level and true to line without warp or rack of frames or sash. Install units centered in openings. Anchor frames adequately to maintain position permanently when subjected to normal thermal stress, building movement, operating activities and specified wind loads.
- D. Insulate all aluminum from direct contact with steel, masonry, concrete or other non-compatible materials with treated wood or plastic shims, or with bituminous paint or zinc chromate primer.
- E. Seal all exterior perimeter joints between windows and surrounding construction in accordance with the approved project shop drawings. Joints and other surfaces that are to receive sealant shall be clean free from loose debris or construction stains and must be totally dry. In all, prepare surfaces that are to receive sealant and apply sealant according to the manufacturer's instructions.
- F. Carefully install pre glazed operating windows within existing window construction in accordance with the approved shop drawings. Take great care not to damage work in place. Apply fillers and perimeter sealant at all such windows.

- G. All assembled window units shall be properly backsealed buttered with sealant where required and properly fastened together before erection. The Architect may inspect delivered units to determine whether joints are satisfactorily sealed before installation.
- H. Apply sealant in all field assembled metal to metal joints as required to provide a completely weathertight installation. Install sealant in strict accordance with the manufacturer's application instructions, in a continuous manner, with sealant bead uniform in width in each direction. Tool sealant surface to a smooth uniform density, Remove excess sealant immediately.
- I. Installation of window assemblies shall provide for thermal expansion and contraction without impairment of function or weather resistance.

3.03 ADJUSTMENTS, PROTECTION AND CLEANING:

- A. Adjust operating sash and sash hardware to provide tight fit at contact points and at weather-stripping, for smooth operation and weathertight closure. Check all operating sash and demonstrate operation free from twist and rattle.
- B. Adjust the sash hardware so that the sash is perfectly square in the primary frame member. Lubricate hardware and all moving parts as necessary and in accordance with manufacturer's instructions.
- C. Clean aluminum surfaces promptly after installation of window units in accordance with the manufacturer's instructions. Exercise extreme caution to avoid damage to finish. Remove excess glazing materials and sealant compounds, dirt and other substances by using mineral spirits or other solvent acceptable to sealant manufacturer. Touch up blemishes and other defects in the surface.
- D. Clean interior and exterior surfaces of glass promptly after installation of window units. Wash down exposed surfaces using a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- E. Protect glass and window materials from contact with contaminating substances resulting from construction operations. After installation and cleaning the window contractor and/or general contractor shall be responsible for maintaining the cleanliness and protection of the window units from damage from other trades.
- F. Initiate all protection and other precautions required to ensure that window units will be free from damage or deterioration (other than normal weathering) at time of acceptance. Send to architect, with copy to Owner, written recommendations for the maintenance and protection of the windows following Substantial Completion.
- G. Apply both a "Rescue" and "Escape" sticker adhered to glass of each Emergency Escape Window.

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SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Section 08 12 13 - Steel Door Frames
 - 2. Section 08 13 13 - Steel Doors
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 101 - Life Safety Code.
 - 4. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes. Submit under provisions of Section 01 33 00.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware

Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Operating and Maintenance Manuals: Provide manufacturer's operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

D. Warranties and Maintenance: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing both standard and electrified builders hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor in good standing by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural

Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- D. Source Limitations: Obtain each type and variety of Door Hardware specified in this Section from a single source, qualified supplier unless otherwise indicated.
1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- E. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:
1. NFPA 70 "National Electrical Code", including electrical components, devices, and accessories listed and labeled as defined in Article 100 by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 2. Where indicated to comply with accessibility requirements, comply with the State Building Code and the Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
 - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
 3. NFPA 101: Comply with the following for means of egress doors:
 - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. Thresholds: Not more than 1/2 inch high.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.

5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, arrange for manufacturers' representatives to hold a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- C. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- D. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Field verify all dimensions and locations prior to shop drawing submittal.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturers, agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner, this includes all labor required to repair or replace product. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for extra heavy duty cylindrical (bored) locks and latches.
 - 2. Seven years for heavy duty cylindrical (bored) locks and latches.
 - 3. Five years for exit hardware.
 - 4. Ten years for manual door closers.
 - 5. Two years for electromechanical door hardware.

1.8 MAINTENANCE

- A. Maintenance Tools and Instructions: Provide a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
 - 1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3.
 - a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. The hardware schedule is based on the following manufacturers:
 - 1. Locks, passage & privacy sets - Schlage

- B. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in AIA Document A701 – Instructions To Bidders and Division 01, Section 01 60 00, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges, full mortise unless otherwise indicated.
1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'-0": provide 4-1/2" x 4-1/2" standard hinges.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Interior Doors: Standard weight, steel, 5 knuckle, ball bearing hinges unless Hardware Sets indicate heavy weight.
 - b. Exterior Doors: Provide continuous gear hinges.
 4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
 - 1) Doors out-swinging into corridors.
 5. Acceptable Manufacturers:
 - a. Bommer Industries (BO).
 - b. Hager Companies (HA).
 - c. Ives (IV).
 - d. McKinney Products (MK).
 - e. Stanley Hardware (ST).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 certified continuous geared hinge with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Provide concealed flush mount (with or without inset), full surface, or half surface, in standard and heavy duty models, as specified in the Hardware Sets. Concealed continuous hinges to be U.L. listed for use on up to and including 90 minute rated door installations and U.L. listed for windstorm components where applicable. Factory cut hinges for door size. Color of hinge to be selected by Architect from manufacturer's standard colors.
1. Basis of Design: Roton by Hager Hinge Co. (RO)

2. Acceptable Manufacturers:
 - a. Roton by Hager Hinge Co. (RO)
 - b. Bommer Industries (BO).
 - c. Ives (IV).
 - d. McKinney Products (MK).
 - e. Pemko Manufacturing (PE).
 - f. Stanley Hardware (ST).

2.3 DOOR OPERATING TRIM

- A. Door Push Plates and Pulls: ANS/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 1. Push/Pull Plates: Minimum .050 inch thick, 4-inches wide by 16-inches high, stainless steel with square corners and beveled edges, secured with exposed screws unless otherwise indicated.
 2. Straight Pull Design: Minimum 1-inch round diameter stainless steel tube stock pulls with 2 1/2-inch clearance from face of door. Length to be 10" center to center. Attach with concealed fasteners as required for door type. All pulls will include an associated plate.
 3. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. All fasteners used for attachment are to be of anti-theft design.
 4. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Hiawatha, Inc. (HI).
 - c. Ives (IV).
 - d. Rockwood Manufacturing (RO).
 - e. Trimco (TC).
 - f. Hager Companies (HA).
- B. Kickplates shall be 10" high x 2" less than nominal door width, .050" thick stainless steel with 4 beveled edges.. Install on push side of door. All fasteners used for attachment are to be of anti-theft design.
 1. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Hiawatha, Inc. (HI).
 - c. Ives (IV).
 - d. Rockwood Manufacturing (RO).
 - e. Trimco (TC).
 - f. Hager Companies (HA).

2.4 CYLINDERS AND KEYING

- A. Locks shall be grandmaster keyed as directed by the Owner and Architect.
- B. Supply two keys for each lock and 5 master keys for each master key grouping.
- C. Provide all keys of nickel silvermetal only.

- D. Hardware consultant shall meet with owner/architect to determine specific keying requirements and functions of locks.
- E. Cylinders to be high security interchangeable core 6-pin.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified cylindrical (bored) locksets **and be tested by an independent third party testing agency to meet a minimum of 10 million cycle tests** furnished in the functions as specified in the Hardware Sets. Lock chassis fabricated of heavy gauge steel, zinc dichromate plated, with through-bolted application. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt. Locks are to be non-handed and fully field reversible.
 - 1. Locksets to incorporate a free-wheeling lever design with a lifetime warranty against lever sag and spring breakage on all locking functions.
 - 2. Basis of Design: Schlage (SC) – ND Series.
 - 3. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) – CL3300 Series.
 - b. Sargent Manufacturing (SA) – 10 Line.
 - 4. Lever and rose shall be “Rhodes (RHO)” or equal from acceptable manufacturers.
 - 5. Cylinders: high security interchangeable core 6-pin or equal.
 - 6. Tactile warning - Levers shall be KNURLED or MILLED at doors leading into all hazardous locations (ie. electric rooms, mechanical rooms, elevator machine rooms). Do not use abrasive coating or applied tape in lieu of knurling or milling.

2.6 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
 - 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 - 2. Standards: Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 - 3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - a. Closers shall not be installed on exterior or corridor side of doors; where possible, install the closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.
 5. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for a complete installation.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers **and be tested by an independent third party testing agency to meet a minimum of 5 million cycle tests**, with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units and high impact, non-corrosive plastic covers standard.
1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) – DC8000 Series.
 - b. LCN Closers (LC) - 4040XP Series.
 - c. Sargent Manufacturing (SA) - 351 Series.
 - d. Norton Door Controls (NO) - 7500 Series.

2.7 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
 2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
 3. Except on fire rated doors, provide exit devices with keyed cylinder dogging to hold the pushbar and latch in a retracted position.
 4. Flush End Caps: Provide heavy weight impact resistant flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
 5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty trim with cold forged escutcheons, beveled edges, and four threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide design to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide an interchangeable core type keyed cylinder (Rim or Mortise) as specified.
 6. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 7. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
 8. Lever handle design shall be type "06" or equal.

- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets **and be tested by an independent third party testing agency to meet a minimum of 10 million cycle tests.** Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlock feature.
1. Basis of Design: Von Duprin (VD) - 98 XP Series.
 2. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
 - b. Sargent Manufacturing (SA) - 80 Series.
 - c. Precision Apex 2000 Series.

2.8 DOOR STOPS

- A. General: Door stops to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic.
1. Acceptable Manufacturers:
 - a. Ives (IV).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).

2.9 LOW ENERGY DOOR OPERATOR SYSTEM

- A. Provide a low energy door operator that incorporates the items specified below as required to install a complete, operable system.
1. Provide an ADA compliant, low energy door opener system with all components required to make operable and comply with code.
 2. Components:
 - a. One electrically powered automatic operator: Push side, surface mounted LCN Model 4640 Auto-Equalizer with built-in 24 VDC power supply to power peripheral actuators and electric strikes. Provide on/off and hold open switches on box.
The cover powder coat color to be aluminum.
 - b. One wall mounted stainless steel touch plate actuator on Corridor side of door.
LCN Model 8310-853T – 4-3/4" x 4-3/4" actuator installed in 8310-867S surface mount electrical box.
 - c. One electric strike: Von Duprin Model 6400 fail secure (FOR EXISTING FRAME)
 - d. Provide a deactivation (on/off) switch on the classroom side of the door. See electrical drawings.
 3. The Low Energy Door Operator is to meet all required standards of ICC A117.1 – 2009 and ANSI/BHMA A156.19, latest edition.

4. Provide all electrical connections, junction boxes, electrical boxes, 120 VAC to power supply built into the operator, all low voltage wiring, wiremold, etc. as required to install the complete operator system in fully functional condition.
5. If a new electric strike is specified to be installed in an existing metal door frame that is concrete-filled, the Contractor is required to chip-out the concrete and cut through the existing reinforcement plate as required to install the new electric strike.
6. All wiring is to be run concealed. If running the wiring concealed is not possible provide Legrand 500 Series Wiremold (or equal) as required.
7. See drawings for location of all actuators. Verify actual location at site with Architect prior to installation.

B. Acceptable Manufacturers:

1. LCN (Basis of Design)
2. Stanley Hardware - Model: M-Force
3. Dormakaba – Model: ED-100

2.10 DOOR SILENCERS

- A. All new interior metal door frames shall be provided with door silencers, 3 per single door and 2 for pair of doors.

2.11 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.12 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- D. Hardware in General: US26D Dull Chrome
- E. Exit Devices, flat goods - US32D - Satin Stainless Steel
- F. Continuous hinges - clear anodized aluminum or dark bronze anodized (selected by Architect)s

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

- F. NOTE: Coordinate installation of new door hardware with existing frames scheduled to remain. All new locksets are to be aligned as required to match-up with the existing strikes. Hinge locations are to be coordinated to match-up with the existing frame mortises. Verify all conditions at site prior to fabrication.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Clean work under provisions of 01 70 00.
- B. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- C. Clean adjacent surfaces soiled by door hardware installation.
- D. Clean operating items as necessary to restore proper finish. and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SCHEDULE

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

3.9 COMPLETE HARDWARE INSTALLATION

- A. The following schedule listings cover typical openings. The Contractor shall be responsible for complete examination of the drawings and shall provide all hardware required. Any hardware necessary but not specifically mentioned herein shall be of the like quality, weight, design and finish as similar openings or items specified herein.
- B. Provide silencers on all new metal frames. Three on single leaf door frames, two on pairs of doors and four on double egress.

3.10 HARDWARE SCHEDULE:

HW-1 Aluminum Doors

Cylinders - Type and quantity as required

HW-2 Exterior Pairs Egress Doors - with Outside Key & Lever

2 Continuous Geared Hinges Roton 780-111 HD (or equal)
1 Exit Device CD-98-47-L-NL x 06 lever
1 Exit Device 98-47-EO (exit only – no outside trim)
2 Closers with cush-n-stop
2 Kickplates

HW-3 Interior Single Non Rated Doors with Push/Pull

Butts
1 Push Plate
1 Door Pull
1 Deadlock Schlage B663P
1 Closer
1 Kickplate
1 Stop
3 Silencers

HW-4 Single Private Toilet Room Doors

Butts
1 Privacy Lockset Arrow APL Series with occupancy indicator.
1 Closer
1 Stop
3 Silencers

HW-5 Interior Single Fire Rated Doors with Storeroom Lock and Closer

Butts

1 Lockset Schlage ND80PD

1 Closer

1 Kickplate

1 Stop

3 Silencers

HW-6 Single Existing Door

1 Low Energy Door Operator System

1 Lockset Schlage ND75PD Classroom Security Lockset

END OF SECTION

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SECTION 08 71 50

WEATHERSTRIPPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The furnishing and installation of all door weatherstripping, sound and smoke proofing.

1.02 RELATED SECTIONS

- A. 08 12 13 - Steel Door Frames
- B. 08 13 13 - Steel doors
- C. 08 42 13 – Aluminum Entrance doors

1.03 DESIGN REQUIREMENTS

- A. All work not shown or specified but required to complete the installation shall be provided.
- B. Provide and install weatherstripping on all new exterior doors.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Shop drawings: Indicate various styles with model numbers and manufacturer.
- C. Provide samples if asked for by Architect.

1.05 QUALIFICATIONS

- A. Installer: Products specified under this section shall be installed by competent tradesmen experienced in this work.

1.06 REGULATORY REQUIREMENTS

- A. Work shall satisfy requirements of government agencies having jurisdiction.
- B. All thresholds to comply with the state building code and ANSI A117.1.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.

1.08 FIELD MEASUREMENTS

- A. Field verify all dimensions prior to installation.

1.09 WARRANTY

- A. Provide one year warranty under provisions of Section 01 78 00.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Pemko
- B. Other acceptable manufacturers offering equivalent products.
 - 1. Accurate Metal Weatherstrip Co., Inc.
 - 2. Zero International, Inc.
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS

- A. Exterior outswinging metal doors with metal jamb.
 - 1. Head and jambs: 316DPK
 - 2. Sweep: 315DN
 - 3. Threshold: 252X3AFG (thermal break)
 - 4. Astragal: 18041DP
- B. Aluminum Doors
 - 1. Sweep: 315_N (Finish to match door)
 - 2. Threshold: 252X3AFG (thermal break)

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Weatherstripping shall be applied in accordance with manufacturers specifications. Thresholds shall be set in elastic cement and held in place with rawl plugs and aluminum screws.

3.02 DISSIMILAR MATERIALS

- A. Where aluminum surfaces come in contact with metals other than stainless steel, zinc, white bronze or other metals compatible with aluminum, aluminum surfaces shall be kept from direct contact with such parts by (a) painting the dissimilar metal with a coating of heavy bodied bituminous paint, (b) a good quality caulking placed between aluminum and dissimilar metal, or (c) a non-absorptive tape or gasket.

3.03 ADJUSTMENTS

- A. Adjust weatherstripping as required to provide proper weatherproofing.
- B. Gaskets and/or caulking shall be provided as required for a proper installation.

3.04 CLEANING

- A. Clean work under provisions of Section 01 70 00.

END OF SECTION

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SECTION 08 81 00

GLASS AND GLAZING

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.02 SCOPE: Provide all glass and glazing work complete in accordance with the Specifications and Drawings.

1.03 RELATED SECTIONS

- A. Section 08 12 13 – Steel Door Frames
- B. Section 08 13 13 - Steel Doors
- C. Section 08 42 13 – Aluminum Entrance Doors
- D. Section 08 43 15 – Aluminum Storefront System

1.04 REFERENCES

- A. ANSI Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
- B. ASTM E84 - Surface Burning Characteristics of Building Materials.
- C. FS DD-G-451 - Glass, Float or Plate, Sheet, Figured (Flat, for Glazing, Mirrors and Other Uses).
- D. FS DD-G-1403 - Glass, Plate (Float), Sheet, Figured, and Spandrel (Heat Strengthened and Fully Tempered).
- E. SIGMA No. 64-7-2 - Specification for Sealed Insulating Glass Units.
- F. FGMA - Glazing Manual.

1.05 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- C. Provide data on glazing sealant. Identify colors available.
- D. Submit samples under provisions of Section 01 33 00.
- E. Submit samples of each type glass and each type glazing material.

- F. Submit sealed glass unit manufacturer's certificate under provisions of Section 01 33 00 indicating units meet or exceed specified requirements.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.

1.07 WARRANTY

- A. Provide ten year warranty under provisions of Section 01 78 00.
- B. Warranty: Include coverage of sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements of this Specification Section, provide products listed herein from one of the following:
 - 1. Viracon
 - 2. Vitro Architectural Glass
 - 3. Guardian
- B. Substitutions under provisions of Section 01 60 00.

2.02 GLASS MATERIALS

- A. Safety Glass:
FS DD-G-1403; Kind ft., 1/4" Type 1, tempered. Listed in door schedule as "Temp".
- B. Forced Entry Resistant Insulated Glass (Listed in door schedule as "FERG").
 - 1. 1" insulated - 1" thick (1/4" tempered Guardian Ultraclear (low iron) glass with SN68 Low-E (#2), 5/16" airspace, 7/16" School Guard SG5 laminated glass), hermetically sealed.
 - a. Manufacturer: School Guard Glass (or equal)
 - b. U-Value: .33
 - c. SHGC: .38
 - d. Attack Rating: 5-aal rated for 12 minutes.
ASTM F1233 Class 1.4
 - e. Install in accordance with glass manufacturer's installation specifications. Must be installed with wet structural glazing technique outlined in manufacturer's installation specifications.

2.03 ACCESSORIES

A. Glazing Compound, Tape and Sealant:

1. Compound - Tremco Glazing Compound or approved equal.
2. Tape - Tremco Polyisobutylene #440 or approved equal.
3. Sealant - Tremco Mono Sealant or approved equal.

B. Setting Blocks and Spacers shall be provided of resilient types and materials as recommended by the manufacturer of the glass or glazing materials.

2.04 MANUFACTURER'S LABELS:

Manufacturer's labels showing strength, grade, thickness, type and quality will be required on each piece of glass. Labels must remain on glass until it has been set and inspected. Glazing materials shall be delivered to the site in unopened original containers bearing manufacturer's label specifying the quality, brand, trade name and directions for use. Thinners or additives shall not be used for glazing materials unless specifically recommended by the manufacturer.

Safety glass must bear a permanent visible mark indicating such.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. General: Surfaces of rabbets, glass edges and stops or beads shall be clean, dry, free from dust, oil, rust and loose paint. Metal surfaces shall be wiped clean with solvent recommended by the manufacturer. Glazing materials shall not be applied in temperature below 40 degrees F. or during damp or rainy weather. Glass shall be set without springing or forcing. Glazing compound shall be applied in accordance with the recommendations of the manufacturer. Centered position and compound thickness shall be maintained. Setting blocks at the sills and centering shims inside and out on all four sides of glass shall be provided.

B. All glass shall be installed in accordance to the recommendations of the Flat Glass Jobber's Association Glazing Manual and the glass manufacturer.

C. Glazing in Metal Frames: Glazing shall be of the snap-in type and shall have no exposed fasteners except that glazing in metal frames shall be of the applied type. Glazing shall not be done until frames have been set and adjusted. Glass shall be of proper size, rest on setting blocks and the entire perimeter of the glass shall be bedded in glazing compound. Edge and face clearances shall be maintained uniform and spacers shall be provided. Glazing compound shall fill rabbet solidly with the snap-in bead in place. After bead is in place surplus glazing compound shall be removed from both sides of glass at an angle, so as not to undercut.

3.02 CLEANING: Glass shall be cleaned on both sides of surplus glazing material. Glazing materials shall not be disturbed with scrapers. Acid solutions or water containing caustic soaps shall not be used. Broken and cracked glass and glass not complying with the specifications shall be replaced.

3.03 GLASS SCHEDULE: (See plans for locations)

<u>LOCATION</u>	<u>GLASS</u>
Interior Entrance Doors	Safety Glass
Interior Storefront Windows	Safety Glass
Exterior Storefront Windows	Forced Entry Resistant Insulated Glass
Exterior Steel Doors	Forced Entry Resistant Insulated Glass
Exterior Aluminum Entrance Doors	Forced Entry Resistant Insulated Glass

END OF SECTION

SECTION 08 88 60

INSULATED METAL GLAZING PANELS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Aluminum-faced glazing panels for building storefront doors and sidelight systems.

1.02 REFERENCES

A. American Architectural Manufacturers Association (AAMA):

1. AAMA 609 & 610 Cleaning and Maintenance Guide for Architecturally Finished Aluminum
2. AAMA 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels

B. American Society of Civil Engineers (ASCE):

1. ASCE/SEI 7 Minimum Design Loads for Buildings and Other Structures

C. ASTM International:

1. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
2. ASTM C920 Standard Specification for Elastomeric Joint Sealants
3. ASTM D2244 Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
4. ASTM D4214 Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
5. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
6. ASTM E330-84: Structural Performance of Exterior Windows, Curtain Walls and Doors under the influence of wind loads.
7. ASTM D1781-76: Climbing Drum Peel Test for Adhesives.
8. ASTM D3363-74: Method for Film Hardness by Pencil Test.
9. ASTM D2794-90: Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
10. ASTM D3359-90: Method for Measuring Adhesion by the tape test.
11. Hurricane Impact Requirements:
Must meet requirements for Large Missile Impact resistance.

1.03 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Submit material descriptions, dimensions of individual components and profiles, and finishes for glazing panels.

C. Product Design: Submit design data including, but not limited to, material properties, section properties, and capacities for glazing panels.

D. Selected Samples: Submit Manufacturer's color charts or chips illustrating full range of colors and finishes available for glazing panels with factory-applied finishes.

1. Verification Samples:

- a. Submit one sample in thickness specified that measures approximately 3 inches x 5 inches, minimum.
- b. Submit two samples of each color or finish selected that measure approximately 3 inches x 4 inches, minimum.

E. Quality Assurance Submittals:

1. Glazing Panel Material Certification: Submit an official written statement from the Manufacturer documenting that product raw materials meet specified standards. Certification shall be backed by test reports and/or material certificates.
2. Glazing Panel Product Certification: Submit an official written statement from the Manufacturer documenting that product complies with specified tested standards indicated in this specification. Certification shall be backed by test reports.

F. Closeout Submittals:

1. Warranty: Submit Manufacturer and Installer warranty documents as specified within the Warranty section of this specification.
2. Maintenance: Submit Manufacturer's recommendations document for Cleaning and Maintenance of the glazing panels.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer Qualifications: Company with a minimum of 10 years of continuous experience manufacturing glazing panels of the type specified:
 - a. Able to provide specified warranty on finish.
2. Installer Qualifications:
 - a. The Installer shall have:
 - i. Been in business of a similar trade and under the present company name for at least five (5) years prior to the start of this project, and
 - ii. Experience with similar sized glazing panel projects, and
 - b. The Installer must be capable of providing field service representation during installation.

B. Conform to all applicable Federal, State and local codes and laws.

1.05 DELIVERY AND STORAGE

A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.

B. Upon receipt, perform visual inspection of glazing panels and inventory to identify any damages that may have occurred during shipping or any missing panels.

C. Storage:

1. Store glazing panels horizontally on pallets in a dry, well-ventilated environment under the protection of a temporary or permanent structure. If required to be stored in an exterior area, glazing panels must be placed under a well-ventilated, waterproof covering.
2. Store glazing panels a minimum of 4" above ground level to avoid contact with standing moisture (e.g. water, snow, etc.).
3. Store glazing panels in an area protected from other construction activities and associated debris.

4. Storage temperatures are not to exceed 120°F. Protect glazing panels from moisture and direct sunlight while on the job-site.
5. Do not stack more than 1000 pounds glazing panels on one pallet. Other materials shall not be stacked on, or placed in contact with, glazing panels to prevent staining, denting, or other damages.

1.06 PROJECT CONDITIONS

- A. Field/Shop Measurements: Verify locations of framing members and glazing dimensions by field/shop measurements prior to the preparation of the glazing panels.

1.07 WARRANTY

- A. Provide warranties for the specified product under the provisions of Section 01 78 00.
- B. Panel Manufacturer's Material Warranty: Submit, to the Owner, the Manufacturer's standard warranty.
 1. Warranty Period:
 - a. Material and Product Integrity: Five (5) years against delamination at any manufactured bond line
 - b. Coil-Coated PVDF/Kynar 500 Painted Finish: Minimum twenty (20) years against:
 - i. Chalking in excess of a numerical rating of eight (8) when measured in accordance with ASTM D4214, Method A
 - ii. Fading or change color in excess of five (5) E units (NBS) when calculated in accordance with ASTM D2244, paragraph 6.3
 - iii. Cracking, chipping, splitting, blistering, peeling, or loss of adhesion. Minute fracturing (i.e. crazing or cracking) as a result of routing and bending of the panels shall be excluded.
- C. Installation Warranty: Installer shall submit to the Owner a standard warranty document executed by an authorized company official. The warranty shall be in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
 1. Warranty Period:
 - a. Workmanship: One (1) year warranty period commencing on Date of Substantial Completion.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Glazing Panel Manufacturers:
 1. Insulated metal glazing panels (MapeShield) manufactured by Mapes Architectural Panels – www.mapes.com
 2. Substitutions: Under provisions of Section 01 60 00.

2.02 GLAZING PANELS

A. Panel Description

1. Construction:

- a. Exterior Substrate: Tempered Hardboard: 1/8"
- b. Impact Resistant Layer: Galvanized Steel
- c. Core: Isocyanurate: 3/4"
- d. Interior Substrate: Tempered Hardboard: 1/8"
- e. Aluminum Sheets (finish material skin on both sides) (in accordance with ASTM B209):
Thickness: 0.032 inch
- f. Fire Performance (tested in accordance with ASTM E84): Class A Material
 1. Flame Spread Index (FSI) shall not be more than 25
 2. Smoke Developed Index (SDI) shall not be more than 450
- g. Tolerances - .8% of panels dimension length and width - (+/-) 1/16" thickness
- h. Panel Thickness - 1.3125"
- i. R-Value - 8.73
- j. U-Value - 0.11

2.03 FINISH

A. Aluminum Finish: Finish shall meet the performance criteria of AAMA 2605.

1. Standard and Standard Metallic Finishes:
 - a. Selected by Architect from Manufacturer's standard color chart

2.04 RELATED MATERIALS

A. General: Refer to Related Sections specified herein for other materials, including joint sealants.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Site Verification of Conditions: Verify that conditions of door, door frame, window, and glazing systems are acceptable for the glazing panels installation.
- B. Panel surfaces shall be free from defects prior to installation.

3.02 INSTALLATION

- A. Fabricate glazing panels with sharply cut edges and no displacement of face sheets or protrusion of core. When applicable, form glazing panel panned edges to be sharp, true, and free of buckle and/or warp.
- B. Fabrication Tolerances:
 1. Width: +/- 1/16 inch
 2. Length: +/- 1/16 inch
 3. Squareness: +/- 1/16 inch

C. Glazing Panel Installation:

1. Handling:
 - a. Protective masking should be left on the field of each glazing panel during installation to minimize potential damages from construction activities.
 - b. Handle glazing panels with clean work gloves to avoid hand injury from any sharp edges and to prevent staining of surfaces with contaminants.
 - c. When removing individual glazing panels from stacks, always lift one panel completely off the next to prevent surface scratches from construction debris. Do not slide one glazing panel across another. Glazing suction cups are recommended to handle glazing panels whenever possible.
2. Install the glazing panels plumb, level, and true in accordance with the glazing systems requirements. Install panels such that all edges are fully encapsulated and restrained from movement forward, backward, and side-to-side while allowing for thermal expansion.
3. Comply with Manufacturer's instructions for installation of joint sealants.
4. Separate contact of dissimilar metals with approved methods as defined by the Manufacturer in order to eliminate the possibility of corrosive or electrolytic action between metals.
5. Glaze panels securely and in accordance with approved shop drawings and manufacturer's instructions to allow for necessary thermal movement and structural support.
6. Do not install panels that are observed to be defective including warped, bowed, dented, scratched and delaminating components.
7. Weatherseal all joints as required using methods and materials as previously specified.

3.03 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon Architect's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 REMEDIATION AND CLEANING

A. Remediation:

1. Remove and replace glazing panels damaged as a direct result of activities in the Glazing Panel Installation section.
2. Remove protective masking immediately after installation of glazing panels. Masking intentionally left in place after Glazing Panel Installation on an elevation at the direction of the General Contractor shall become the responsibility of the General Contractor.
3. Glazing Panel Installation completion shall be agreed-upon between the Installer and the General Contractor.
4. Following Glazing Panel Installation completion, any determination of repair or replacement of the glazing panels is at the discretion of the Architect. Such repair or replacement shall become the responsibility of the General Contractor.
 - a. At the discretion of the Architect, repair damaged glazing panels such that repairs are not discernible at a distance of 10 feet from the surface at a 90° angle per AAMA 2605.
5. Removal and replacement of glazing panels damaged by other trades shall be the responsibility of the General Contractor.

6. If required after Glazing Panel Installation, any additional protection of the glazing panels shall be the responsibility of the General Contractor.
7. Remove from project site damaged glazing panels, protective masking, and other debris attributable to work of this section.

B. Cleaning:

1. Cleaning and Maintenance of the glazing panels shall be performed at least once a year in accordance with AAMA 609 & 610.
2. Weep holes and drainage channels must be unobstructed and free from dirt and sealant.

END OF SECTION

SECTION 09 21 16

STEEL FRAMED DRYWALL SYSTEMS

PART 1 - GENERAL

- 1.01 SCOPE: Provide all necessary materials for construction of drywall systems.
- 1.02 RELATED SECTIONS:
- A. Division 06 Carpentry Section for wood framing, blocking and furring.
 - B. Division 09 Painting Section for paint applied to gypsum board surfaces.
- 1.03 DELIVERY AND STORAGE OF MATERIALS:
- A. Deliver, store, and handle under provision of Section 01 60 00.
 - B. All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises. Stack gypsum panels flat to prevent sagging.
- 1.04 ENVIRONMENTAL CONDITIONS:
- A. In cold weather and during gypsum panel joint finishing, temperatures within the building shall be maintained within the range of 55 degrees to 70 degrees F. Adequate ventilation shall be provided to carry off excess moisture.
 - B. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
- 1.05 SUBMITTALS
- A. Submit under provisions of Section 01 33 00.
 - B. Product Data: Submit product data on all materials and accessories.

PART 2 - PRODUCTS

- 2.01 MANUFACTURERS
- A. Provide manufacturer and product specified under the Materials paragraph below.
 - B. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS: See drawings for size and location of materials.

- A. Non-Structural Studs: Cold-formed galvanized steel C-studs as per ASTM C 645, ProSTUD products manufactured by ClarkDietrich Building Systems.
 - 1. See drawings for gage, minimum 25 gage for interior non-load bearing, maximum 10'-0" high and 20 gage for above 10'. Provide 20 gage for jamb and lintel components.
 - 2. Flange Size: 1 1/4 inch.
 - 3. Web Depth: As specified on Drawings.
- B. Non-Structural Track: Cold-formed galvanized steel runner tracks, drywall track, in conformance with ASTM C 645, ProTRAK as manufactured by ClarkDietrich Building Systems.
 - 1. Flange Size: 1-1/4 inch
 - 2. Web Depth: Track web to match and coordinate with stud web size.
- C. Metal Furring (Hat) Channel manufactured by ClarkDietrich Building Systems: 7/8" depth by 10' or 12' length, (20 gauge at ceilings) (25 gauge at walls), meet or exceed ASTM C645.
- D. Z Furring Channel manufactured by ClarkDietrich Building Systems available in 1", 1-1/2", 2", 2 1/2" depths by 10' length with 1 1/4" wide flange, meet or exceed ASTM C645.
See drawings for size and gage.
- E. Provide 1-1/2" Cold-Rolled Channels.
- F. Galvanized Hanger Wire (12-ga)
- G. 18-ga. Galvanized Tie Wire.
- H. Faceboards - 48" wide USG Sheetrock Brand
Firecode Type X gypsum board
Provide lengths as required.
Thickness to be as indicated on drawings. If not indicated on drawings, board to be 5/8" thick.
- I. Fasteners - USG Screws: 3/8" Type S, pan head: 3/8", 1/2" Type S-12, pan head; 5/8" Type S-12 low-profile head; 1", 1-1/4", 1-5/8", 1-7/8", 2-1/4" Type S, bugle head; 1", 1-5/8", 2-1/4" Type S or S-12, trim head; 1-1/2" Type G, bugle head; 1-1/4" Type W, bugle head; 1'-1/4" annular ring drywall nail.
- J. USG Trim No. (200-A)(401)(402)(P-1)(801-A)(801-B).
- K. USG Corner Bead - (No. 103 DUR-A-BEAD) (No. 104 DUR-A-BEAD)(No.800) Metal Corner Reinforcement.
- L. USG Control Joint No. 093
- M. Joint Treatment (select a United States Gypsum Company Joint System)

Standard Gypsum Finish = Joint Treatment: Sheetrock Brand All Purpose Joint Compound.
Provide a Level 4 gypsum board finish. (Coat gypsum only at joints and fasteners)
This finish is to be used typically everywhere except where otherwise noted on the drawings.

- N. USG Acoustical Sealant

PART 3 - EXECUTION

3.01 PARTITION INSTALLATION

- A. **STUD SYSTEM ERECTION:** Attach steel runners at floor and ceiling to structural elements with suitable fasteners located 2" from each end and spaced 24" o.c.
To suspended ceilings, use toggle bolts or hollow wall anchors spaced 16" o.c.

Position studs vertically, with open side facing in same direction, engaging floor and ceiling runners, and spaced 16" o.c. When necessary, splice studs with 8" nested lap and two positive attachments per stud flange. Place studs in direct contact with all door frame jambs, abutting partitions, partition corners and existing construction elements. Where studs are installed directly against exterior walls and a possibility of water penetration through walls exists, install asphalt felt strips between studs and wall surfaces.

Anchor all studs for shelf-walls and those adjacent to door and window frames, partition intersections, corners and freestanding furring to ceiling and floor runner flanges with USG Metal Lock Fastener tool or screws. Securely anchor studs to jamb and head anchors of door or borrowed light frames by bolt or screw attachment. Over metal door and borrowed light frames, place horizontally a cut to length section of runner, with a web flange bend at each end, and secure to strut-studs with two screws in each bent web. Position a cut-to-length stud (extending to ceiling runner) at vertical panel joints over door frame header. When attaching studs to steel grid system, structural adequacy of grid to support end reaction of wall must be determined.

- B. As occurring:
Install Sound Attenuation Insulation after gypsum panels are applied to the resilient channel (if occurring) and before panels are applied to other side of studs. Insert the sound insulation in the stud cavity, by bowing the blanket slightly. After inserting, make a vertical cut between the studs. Slit the blanket with a sharp utility or hook-bill knife to ease the pressure of the blanket against the gypsum panels when they are installed. Butt ends of blankets closely together and fill all voids. Seal perimeter of gypboard and all penetrations with acoustical sealant to complete the requirements for a sound retardant partition.

3.02 APPLYING INTERIOR GYPSUM BOARD

- A. **Single-Layer Application:**
1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
 2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
 3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
 4. **Fastening Methods:** Apply gypsum panels to supports with steel drill screws.

B. Gypsum Panel Attachment

Screw spacing that follows is for non-rated construction. For fire-rated construction, obtain screw spacing from manufacturer's fire test report.

For single-layer panel application, space screws 16" o.c. in field and along abutting end joints.

3.03 DRYWALL SOFFIT ERECTION:

- A. Attach steel runners 24" o.c. to concrete slabs and concrete stub nails or power-driven anchors, to suspended ceilings with toggle bolts or to wood framing with suitable fasteners. On stud walls, space fasteners to engage each stud. On ceilings, place fastener close to outside face runner. Fasten vertical face panel to web of face corner runner and flange of ceiling runner with 1" Type S Screws spaced 12" o.c. For braced furring, insert steel studs between face corner runners, sidewall and ceiling runners and attach studs to runners with Metal Lock Fastener tool or 3/8" pan head screws. Attach face panels to steel studs and runners with 1" Type S Screws spaced 12" o.c. Space screws in corner runner at least 1" from gypsum panel edge.

3.04 WALL FURRING INSTALLATION

- A. METAL FURRING (HAT) CHANNEL INSTALLATION: Attach metal furring channels horizontally, spaced 24" o.c. to interior of masonry or concrete surface with hammer set or power driven fasteners or concrete stub nails staggered 24" o.c. on opposite flanges. Where furring channel is installed directly to exterior wall and a possibility of water penetration through walls exists, install asphalt felt protection strip between furring channel and wall.

Apply gypsum panels parallel to channel. Position all edges over furring channels in parallel application; all ends over framing in perpendicular application with joints staggered in successive courses. Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together. Fasten panels to channels with 1" Type S Screws spaced 16" o.c.

- B. Z FURRING CHANNEL INSTALLATION: Erect insulation vertically and hold in place with Z-furring channels spaced 24" o.c. Except at exterior corners, attach narrow flanges of furring channels to wall with concrete stub nails or power driven fasteners spaced 24" o.c. At exterior corners, attach wide flange of furring channel to wall with short flange extending beyond corner. On adjacent wall surface, screw attach short flange of furring channel to web of attached channel. Start from this furring channel with a standard width insulation panel and continue to regular manner. At interior corners, space second channel no more than 12" from corner and cut insulation to fit. Hold mineral fiber insulation in place until gypsum panels are installed with 10" long staple field fabricated from 18 ga. tie wire and inserted through slot in channel. Apply wood blocking around window and door opening and as required for attachment of fixtures and furnishings.

Apply gypsum panels parallel to channels with vertical joints occurring over channels. Use no end joints in single-layer application. Attach gypsum panels with 1" Type S Screws spaced 16" oc. in field of panels and at edges, and with 1-1/4" Type S Screws spaced 12" o.c. at exterior corners. For double-layer application, apply base layer parallel to channels, face layer either perpendicular or parallel to channels with vertical joints offset at least one channel. Attach base layer with screws 24" o.c. and face layer with 1-5/8" screws 16" o.c.

3.05 ACCESSORY APPLICATION

- A. JOINT SYSTEM: Finish all face panel joints and internal angles with a United States Gypsum Company Joint System installed according to manufacturer's directions. Spot exposed fastened on face layers and finish corner bead, control joints and trim as required, with at least three coats of joint compound, feathered out onto panel faces and sanded smooth.
- B. CORNER BEAD: Reinforce all vertical and horizontal exterior corners with corner bead fastened with 9/16" galvanized staples 9" o.c on both flanges along entire length of bead.
- C. METAL TRIM: Where assembly terminates against masonry or other dissimilar material, apply metal trim over panel edge and fasten with 9/16" galvanized staples 9" o.c.
- D. SCREWS: Power drive at least 3/8" from edges or ends of panel to provide uniform dimple 1/32" deep.
- E. CONTROL JOINTS: Break panel behind joint and back by double framing members (and 2" wide gypsum panel strip). Apply acoustical sealant to fill gap and attach control joint to face layer with 9/16" galvanized staples spaced 6" o.c. on both flanges along entire length of joint. Provide a full height control joint where a wall or partition extends in a continuous straight plane for more than 30 linear feet or where indicated on the drawings.

3.06 CLEANING

- A. Clean project under provisions of Section 01 70 00.

END OF SECTION

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SECTION 09 28 13

CEMENTITIOUS BACKER BOARD

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. All necessary materials and labor to install cementitious backer board.

1.02 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.

1.03 QUALIFICATIONS

- A. Installer: Company specializing in performing the work of this section with minimum three years experience.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.
- B. Store products in an enclosed shelter providing protection from damage and exposure to the elements.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. In cold weather and during backer board and tile installation, temperatures within the building shall be maintained within the range of 45° to 100°. Adequate ventilation shall be provided. Do not install board when it is wet.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. United States Gypsum Board
- B. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS

- A. Cement Board
 - 1. Durock Interior Cement Board, 5/8" thickness, 48" width x 96" length.
- B. Joint Reinforcement - Durock Interior Tape.

- C. Fasteners
 - 1. Durock Steel Screws, 1-1/4" and 1-5/8" for 14 to 20 ga. steel framing; Durock Wood Screws, 1-1/4", 1-5/8" and 2-1/4" for wood framing.
 - 2. Nails 1-1/2" hot-dipped galvanized roofing nails.

- D. Adhesives/mortars
 - 1. Meeting ASTM C557-73: Multi-Purpose Adhesive (for subfloor attachment).
 - 2. Meeting ANSI A136.1 Type I: Durabond D-67 Multi-Purpose Ceramic Tile Mastic or Durock or Durabond Multi-Purpose Ceramic Tile Mastic.
 - 3. Meeting ANSI A118.4: Durabond D-40 or Durock Latex Fortified Mortar, Durabond D-30 Thin-Cut Marble and Granite Mortar.
 - 4. Meeting ANSI A118.1: Durabond D-50 Thin-Set Mortar. Can be mixed with Durabond D-L16 Acrylic Latex Additive.

- E. Meeting ANSI A118.6: Durock LFG 250 Latex Fortified Grout; Durabond C-150 Commercial Dri-Set Grout mixed with Durabond D-L26 Acrylic Latex Grout Additive.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Framing to receive Durock Board shall be structurally sound, free from bow, and in general compliance with local building code requirements. Damaged and excessively bowed studs shall be replaced before installation of Durock Board.
Wall framing shall be designed not to exceed L/360 deflection. Steel framing must be 20-ga. or heavier with a corrosion-resistant metal coating equivalent to G60 hot dipped galvanized.
Floor application: Maximum joist spacing to be 24" o.c. The subfloor system should be designed with a minimum deflection limit of L/360 for the span.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations.

- B. Space wood and steel framing a maximum of 16" o.c.

- C. Provide and install cementitious backer board as back-up behind all areas where ceramic tile or stone wall base are scheduled and in any additional areas noted on the drawings or in the specifications.

- D. Panel Wall Application: Pre-cut board to required sizes and make necessary cut-outs. Fit ends and edges closely but not forced together. Stagger end joints in successive courses.
Fasten boards to wood studs spaced max. 16" o.c. and bottom plates with 1-1/4" Durock Wood Screws or 1-1/2" galvanized roofing nails spaced 8" o.c.
Fasten boards to steel studs spaced max. 16" o.c. and bottom runners with 1-1/4" Durock Steel Screws space 8" o.c. with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges.

In double-layer walls where backer boards are installed over base-layer gypsum boards, apply a water barrier (not a vapor retarder) over gypsum boards. Prefill joints with tile-setting mortar or adhesive and then immediately embed tape and level the joints. As an alternate, apply Durock

Interior Tape over the joints and then apply tile-setting mortar or adhesive, forcing it through the tape to completely fill and level the joints. This may require several passes to accomplish.

After tub, shower pan or receptor is installed, place temporary 1/4" spacer strips around lip of fixture. Install board abutting top of spacer strip.

3.03 JOINT TREATMENT APPLICATION FOR UNTILED AREA

- A. For small areas where the Durock Board will not be tiled, such as a board extending beyond the tiled area and abutting another surface, treat joints as follows. Seal tile backer board with thinned ceramic tile mastic. (Mix four parts adhesive with one part water.) Embed Sheetrock Joint Tape over joints and treat fasteners with Sheetrock Setting-Type 45 or 90 Joint Compound applied in conventional manner. Flat trowel Sheetrock Setting-Type Joint Compound over board to cover fasteners and fill voids to a smooth surface. Finish joints with at least two coats Sheetrock Ready-Mixed Joint Compound. Do not apply ready-mixed joint compound over unsealed board.

3.04 CLEANING

- A. Clean work under provisions of Section 01 70 00.

END OF SECTION

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SECTION 09 30 13

CERAMIC TILE

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including the General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.02 SECTION INCLUDES

- A. Ceramic tile application where indicated.

1.03 REFERENCES

- A. ANSI/TCA A118.4 - Latex-Portland Cement Mortar.
- B. ANSI/TCA A136.1 - Organic Adhesives for Installation of Ceramic Tile, Type 1 and Type 2.
- C. ANSI/TCA A137.1 - Specifications for Ceramic Tile.
- D. ASTM C-150, Type 1 - Portland Cement Mortar
- E. TCA (Tile Council of America) - handbook for Ceramic Tile Installation.

1.04 SUBMITTALS

- A. Submit product data for ceramic tile under provisions of Section 01 33 00.
- B. Submit product data indicating material specifications, characteristics, and instructions for using adhesives and grouts.
- C. Submit samples for ceramic tile under provisions of Section 01 33 00.
- D. Sustainable Building Material Submittal:
 - 1. Provide documentation indicating percentages of post-consumer and pre-consumer recycled content.
 - 2. Identify each regional material along with the location of its harvest, extraction, or manufacture.

1.05 QUALITY ASSURANCE

- A. Conform to TCA Handbook for Ceramic Tile Installation.
- B. When requested by the Architect, schedule and hold a pre-installation meeting prior to start of work on this section as stipulated in Specification Section 01 31 00 to verify project requirements,

substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

To attend: Architect, Owners Representative, General Contractor, Approved Installer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products under provisions of Section 01 60 00.
- B. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not install adhesives in a closed, unventilated environment.
- B. Maintain 50 degrees F during installation of mortar materials and for 7 days after completion.
- C. All materials are to be low VOC.

1.08 MAINTENANCE DATA

- A. Submit maintenance data on all materials under the provisions of Section 01 78 00.
- B. Submit data including cleaning methods, solutions recommended, and stain removal methods.

1.09 WARRANTY

- A. Provide five year warranty under provisions of Section 01 78 00.
- B. Warranty: Include coverage for defective material.

1.10 EXTRA MATERIALS

- A. Furnish under provisions of Section 01 78 00.
- B. Supply minimum 2% of each type tile and color used, properly packaged for long term storage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Dal-Tile
- B. Other Acceptable Manufacturers
 - 1. American Olean
 - 2. Florida Tile
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS

REPAIRS:

- A. Mosaic ceramic floor tile repairs:
Porcelain type unglazed ceramic tile. Absorption less than 0.5%, color to be integral and homogeneous through the unglazed body.
Provide new ceramic floor tile to match existing in color, pattern, glazing and size. Provide all necessary trim and accessories as required. Final match is to be approved by the Architect.
Verify at site.
- B. Ceramic base tile repairs:
Provide new ceramic base tile to match existing in color, pattern, glazing and size. Provide all necessary trim and accessories as required. Final match is to be approved by the Architect.
Type is to be a 4" high x 6" long glazed ceramic tile with a bullnose top edge. New base is to match the existing base. Verify at site.
- C. Wall tile repairs:
Provide Glazed wall tile. Absorption less than 0.5%, color combination and pattern as selected by Architect. Size 4 1/4"x4 1/4". Provide all necessary trim and accessories as required. Colors as selected by Architect to match existing. Verify at site.

NEW INSTALLATIONS

- A. Mosaic floor tile: Porcelain type unglazed ceramic tile. Absorption less than 0.5%, color to be integral and homogeneous through the unglazed body. Size to be 2"x2", of combination color and pattern as selected by Architect. Provide all necessary trim and accessories as required.
Colors as selected by Architect from a combination of price groups 1, 2 and 3, allowing a 25/50/25 percentage mix for a pattern to be determined.
- B. Base Tile: Porcelain type unglazed ceramic tile. Absorption less than 0.5%, color to be integral and homogeneous through the unglazed body. Size to be 2"x2". Provide all necessary trim and accessories as required. Base tile is to be coordinated and match the color and patterns of the floor tile. Base is to consist of a built-up base with a coved base at the bottom and 2"x2" tiles. Provide a tile bullnose top edge in all locations where there is no wall tile scheduled above the base.
- C. Wall tile: Glazed wall tile. Absorption less than 0.5%, color combination and pattern as selected by Architect. Size 4 1/4"x4 1/4". Provide all necessary trim and accessories as required. Colors as selected by Architect from a combination of price groups 1, 2 and 3, allowing a 25/50/25 percentage mix for a pattern to be determined.

ACCESSORIES

- A. Thresholds:
 - 1. Provide a threshold of Panna Beige marble or light grey veined Missouri or Vermont marble with a sand-rubbed finish. Color selected by Architect. Corners and unprotected edges shall be beveled and rabbeting shall be provided for jambs. Top of the threshold shall be flush with the top of the adjacent ceramic tile floor. Thresholds shall be tapered as required to meet accessibility codes.

- B. Grout: Latex-Portland Cement grout conforming to ANSI A118.6. Color to be selected by the Architect.

PART 3 - INSTALLATION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work, and that substrate has cured a minimum of 28 days.
- B. Beginning of installation means installer accepts condition of existing substrate.

3.02 PREPARATION

- A. Protect surrounding work from damage or disfiguration.
- B. Vacuum clean existing substrate and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION

A. THINSET METHOD

- 1. Floors: Tile shall be installed in accordance with TCA-F113 latex portland cement mortar.
- 2. Walls - All wall or base tile installed over cementitious backer board is to be installed in accordance with TCA-W244 latex portland cement mortar.
- 3. Walls - All wall or base tile installed over masonry is to be installed in accordance with TCA-W202 with latex portland cement mortar.

3.04 APPLICATION

- A. Lay tile to pattern to match existing or to a pattern provided by Architect.
- B. Place edge strips to exposed tile edges.
- C. Cut and fit tile tight to penetrations through tile. Form corners and bases neatly. Align floor and base joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
- E. Sound tile after setting. Replace hollow sounding units.
- F. Keep control joints free of adhesive or grout.
- G. Allow tile to set for a minimum of 48 hours prior to grouting.

- H. Grout tile joints.
- I. Ceramic wall tile and base must be installed on only cementitious backer board, concrete or masonry.
- J. Apply sealant to junction of tile and dissimilar materials and at junction of dissimilar planes.
- K. Seal all grout with a clear sealer as recommended by the grout manufacturer. We recommend a water-based sealer such as Aqua-X Grout Sealer manufactured by Black Diamond Coatings or equal. Apply in accordance to manufacturer's instructions.

3.05 CLEANING

- A. Upon completion of the various portions of his work, the tile contractor shall remove all unused materials, rubbish, etc., that have accumulated as a result of this work.
- B. After the pointing has sufficiently set or hardened, all tile on walls and vertical surfaces, or floors and horizontal surfaces, shall be thoroughly cleaned in an approved manner. All traces of cement or dust accumulations shall be completely removed. In cases where acid solutions are required to clean the face of the finished tile work of surplus grouting or mortar used for pointing, all exposed hardware shall be first covered by a heavy coating of vaseline to protect the metal from the possible effects of the acid or its fumes. Acid solution shall not be used for cleaning glazed tile.
- C. The Tile Contractor shall give the tile work one thorough final cleaning when so instructed by the General Contractor or Architect.

3.06 PROTECTION OF FINISHED WORK

- A. Protect finished work under provisions of Section 01 70 00.
- B. Protect finished floor with heavy covering during construction.
- C. Do not permit traffic on floor for a minimum of 7 days after grouting.

END OF SECTION

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SECTION 09 30 16

QUARRY TILE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Provision and installation of unglazed quarry tile, base and trim units as required to repair existing quarry tile floors and base.

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A108 Series - Specifications for Installation of Ceramic Tile and Dimensional Tile.
 - 2. ANSI A 108. 1 A - Specifications for Installation of Ceramic Tile in the Wet Set Method.
 - 3. ANSI A 108. 10 - Load Bearing, Bonded, Waterproof Membranes for ThinSet Ceramic Tile and Dimensional Tile
 - 4. ANSI A 118 Series - Specifications for Ceramic Tile Mortars and Grouts.
 - 5. ANSI A 136.1 Organic Adhesives for Installation of Ceramic Tile,
 - 6. ANSI A 137.1 Specifications for Ceramic Tile.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C499 Facial Dimensions and Thickness of Flat, Rectangular Ceramic Wall And Floor Tile.
 - 2. ASTM C501 Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser
 - 3. ASTM C 1028 Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Tile Like Surfaces by the Horizontal Dynamometer Pull Meter Method.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Submit product data, including manufacturer's product sheet, for specified products,
- C. Samples: Submit selection and verification samples for finishes, colors and textures,
- D. Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
 - 3. Master Grade Certificate: Submit material master grade certification for quarry tile products.
 - 4. Manufacturer's Instructions: Manufacturer's installation instructions.
- E. Closeout Submittals: Submit the following:
 - 1. Maintenance Data: Maintenance data for installed products in accordance with Division 1 Closeout Submittals, Maintenance Data and Operation Data Section, Include methods for

maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

2. Warranty: Warranty documents specified herein.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
- B. Material Certificates: Provide Master Grade Certificates for each shipment of quarry tile signed by tile manufacturer and Installer.
- C. Pre Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements, Comply with Division 1 Project Management and Coordination, Project Meetings Section.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Ordering; Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Comply with ANSI A137.1 for labeling sealed tile containers.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.06 PROJECT CONDITIONS

- A. Temperature Requirements: Maintain ambient temperature and humidity conditions in spaces where products will be installed for time period before, during and after installation as recommended by manufacturer.
 1. Minimum Temperature: Maintain temperature at 50°F minimum during installation and for seven days after completion.

1.07 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty; Submit the manufacturer's standard warranty document under the provisions of Section 01 78 00. Provide a minimum one year warranty.

1.08 MAINTENANCE

- A. Extra Materials: Deliver to Owner extra materials from same production run as products installed, Package products with protective covering and identify with descriptive labels. Comply with Division I Closeout Submittals, Maintenance Materials Section.
 - 1. Quantity: Furnish full size units. Provide 10 tiles.
 - 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Metropolitan Ceramics, by Ironrock Capital, Inc.
 - 1. Contact: P.O. Box 9240, Canton, OH 44711; Telephone: (800) 325-3945, (330) 484-4887; Fax: (330) 484-4880.
 - 2. Substitutions under provisions of Section 01 60 00.

2.02 PRODUCTS

- A. Quarry tile
 - 1. Quarrybasics® Quarry Tile:
 - a. Tile Description: Unglazed, relieved edge flat tile.
 - b. Size: 6" x 6" x 1/2" (Verify size at site to match existing)
 - c. Wearing Surface: (ASTM C501 Abrasion resistance index 35 or better.) (Metropolitan tests at > 80 or better).
 - d. Coefficient of Friction (ASTM C1028): No industry standard. At time of manufacture, all Metropolitan colors meet or exceed measure of 0.70 dry and 0.60 wet.
 - e. Face size tolerance (ASTM C499) Average facial dimension of each tile in the sample shall not vary more than 4% of nominal dimensions.
 - f. Thickness: 1/2"
 - g. Colors to be selected by Architect from manufacturer's standard colors as required to match the existing surrounding quarry tile flooring. Verify at site.

2.02 RELATED MATERIALS

- A. Reference: Refer to Tile Setting and Accessories Section.
 - 1. Setting Materials: Refer to ANSI A108.1A, ANSI A118 series and ANSI 136.1
 - 2. Grouting Materials: Refer to ANSI 108.10, ANSI A118 series. Color to be selected by Architect from manufacturer's standard colors as required to match the existing surrounding grout.
 - 3. Accessory Materials: Refer to Tile Setting And Accessories Section
 - 4. Sealant Materials: Refer to Joint Sealant Section.

2.03 SOURCE QUALITY

- A. Source Quality: Obtain quarry tile and base from a single manufacturer.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Beginning of installation means installer accepts condition of existing substrate.

3.03 PREPARATION

- A. Surface Preparation: Prepare substrates to receive new quarry tile in accordance with industry installation reference standards and manufacturer's installation instructions. Shot blast or chip-out substrate as required to remove all adhesives or materials determined to be unsuitable by manufacturer's specifications for installation of the tile.
- B. Protect surrounding work from damage or disfiguration.
- C. Vacuum clean existing substrate and damp clean.
- D. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- E. All surfaces must be clean and free from dust, dirt, oil, grease, paint, wax , sealers, curing compounds, or any other deleterious substances which may reduce or prevent adhesion.

3.04 INSTALLATION

- A. References:
 - 1. ANSI Tile Installation Standard: Comply with ANSI A108 series.
 - 2. TCA Installation Reference: Comply with TCA Handbook for Ceramic Tile Installation.
- B. Remove existing damaged floor quarry tile as required. Provide new quarry tile as specified to fill where existing tile has been removed.
- C. Field Blending: Mix and blend tile from several cartons to ensure random distribution of shade variations.
- D. Floor Tile Installation:
 - 1. General: Install quarry floor tile in accordance with industry reference standards.
 - 2. Joint Widths: Allow for joints widths in quarry floor tile of 3/8" or as required to match the existing.

3.05 CLEANING AND PROTECTION

- A. Prohibit traffic from the tiled floors for a minimum of 5 days after completion.
- B. Protect the tile floor with heavy duty, non-staining construction paper, masked in place till end of project.
- C. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products, Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- D. NOTE: Entire quarry tile floor is to be thoroughly cleaned (bleached) including the grout as required to return floor to its original colors. The grout is to be scrubbed as required to regain light original color.
- E. Seal all grout with a clear sealer as recommended by the grout manufacturer. We recommend a water-based sealer such as Aqua-X Grout Sealer manufactured by Black Diamond Coatings or equal. Apply in accordance to manufacturer's instructions.

END OF SECTION

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SECTION 09 51 23

ACOUSTICAL CEILING SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The furnishing and installation of acoustical and suspension ceiling systems.

1.02 RELATED SECTIONS

- A. Division 26 - Electrical

1.03 REFERENCES

- A. Federal Specification SS-S-118B acoustical tile and panel properties.
- B. AMA 1-11 - Sound transmission
- C. ASTM C423 - Sound absorption
- D. UL - Underwriters Laboratories, Inc.
- E. ASTM C635 - Metal suspension system properties
- F. ASTM C636 - Acoustical ceiling system installation procedures

1.04 DESCRIPTION

- A. Acoustical ceiling panels.

1.05 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Include manufacturer's specifications of materials and installation instructions.
- C. Samples: Submit two 6" x 12" samples of panels.
- D. Test reports: Submit data indicating the following ratings:
 - NRC (Noise reduction coefficient)
 - CAC (Ceiling Attenuation Class)
 - Light reflectance.
 - Flame spread
 - Smoke developed

1.06 MAINTENANCE DATA

- A. Submit under provisions of Section 01 78 00.
- B. Submit cleaning and maintenance data including procedures for stain removal and cleaning.

1.07 QUALITY CONTROL

- A. Work shall be performed in accordance with Section 01 45 00.

1.08 REGULATORY REQUIREMENTS

- A. Conform to the manufacturer's recommendations to achieve the fire resistive ratings as listed by Underwriters Laboratories, Inc. (Class A)

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Storage shall be in building, closed to the weather with temperatures ranging from 60°F to 85°F at not more than 70% relative humidity.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acoustical panels
 - 1. Armstrong
 - 2. Other acceptable manufacturers offering equivalent products.
 - a. USG
- B. Suspension System
 - 1. Armstrong
 - 2. Other acceptable manufacturers offering equivalent products.
 - a. Chicago Metallic Corp.
 - b. USG
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS

- A. Acoustical Panels
 - 1. Type "ACT" - Acoustical Ceiling Tile
 - a. Cortega Square Lay-in
(ACT-1 as noted on the drawings)
(Model No. 824: 24"x24" FireGuard)
 - 1. Water felted mineral fiber panel with white latex paint finish.
 - 2. Square Lay-in, 5/8" thick
 - 3. Light reflectance = 0.82
 - 4. Flame spread = 25 or less

5. Smoke developed = 50 or less
6. Class A fire rating per ASTM E1264
7. NRC = 0.55
8. CAC = 35
9. Total recycled content: minimum 40%

B. Suspension Systems

1. Standard Exposed Grid

a. Prelude XL

1. Hot dipped galvanized steel with white baked polyester paint finish.
2. Intermediate duty main runners and cross tees with 15/16" flange face.
3. Wall angles shall be straight edge and corner caps shall be of same materials and finish.
4. Suspend with galvanized steel wire.
5. Total recycled content: minimum 25%

2.03 COLORS

- A. White

2.03 SIZE

- A. All ceiling panels shall be 2'x2'.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that all components in the ceiling plenum are installed. The building shall be in proper condition to receive the acoustical materials before any of the material shall be installed. The acoustical material shall be installed under conditions of normal occupancy. All wet work shall be completed, dry, and the building fully enclosed.

3.02 PROTECTION

- A. Protect existing elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

- A. Install all acoustical panels in strict accordance with the manufacturer's instructions into the existing metal acoustical ceiling grid.
- B. Main runners shall be installed on 24 inch centers and suspended by hanger wire spaced not more than 48 inches on center along the main runners.
- C. Cross tees shall be 24 inches in length and shall be spaced 24 or 48 inches on center along the main runner to form 2'x2' or 2'x4' modules as scheduled on the drawings.
- D. Install wall moldings at intersection of suspended ceiling and all vertical surfaces.

- E. Miter corners where wall moldings intersect or install corner caps.
- F. The acoustical panels shall not be used to support any other materials.

3.04 CLEANING

- A. Clean under provisions of Section 01 70 00.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.02 WORK INCLUDES

- A. Installation of resilient flooring and accessories as indicated.

1.03 REFERENCES

- A. ASTM E84 - Surface Burning Characteristics of Building Materials.
- B. FS L-F-1641 - Floor Covering, Translucent or Transparent Vinyl Surface, with Backing.
- C. FS L-F-475 - Floor Covering, Vinyl Surface (Tile and Roll), with Backing.
- D. FS SS-T-312 - Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.
- E. FS SS-W-40 - Wall Base: Rubber and Vinyl Plastic.

1.04 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01 33 00.
- B. Provide product data on specified products, describing physical and performance characteristics sizes, patterns and colors available.
- C. Submit samples under provisions of Section 01 33 00.
- D. Submit two samples 3 x 3 inches in size, illustrating the full range color and pattern for each floor material specified.
- E. Submit 6 inch long samples of base material for each color specified.
- F. Submit manufacturer's installation instructions under provisions of Section 01 33 00.
- G. Sustainable Building Material Submittal:
 - 1. Provide documentation indicating percentages of post-consumer and pre-consumer recycled content.
 - 2. Identify each regional material along with the location of its harvest, extraction, or manufacture.

1.05 OPERATION AND MAINTENANCE DATA

- A. Submit cleaning and maintenance data under provisions of Section 01 78 00.
- B. Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-finishing.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle work to site under provision of Section 01 60 00.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain minimum 70 degrees F air temperature at flooring installation areas for three days prior to, during, and 24 hours after installation of materials.

1.08 EXTRA MATERIALS

- A. Furnish under provisions of Section 01 78 00.
- B. Provide 6 sq. ft. of each color and pattern of floor material and 10 lineal feet of base of each material required for Project, for maintenance use.
- C. Clearly identify each box.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Vinyl Composition Tile (VCT)
Subject to compliance with requirements of this Specification Section, provide products listed herein from the following:
 - 1. Basis of Design: Armstrong
 - 2. Other acceptable manufacturers offering equivalent products.
 - a. Tarkett VCT
 - b. Congoleum
- B. Vinyl base and edge guards
Subject to compliance with requirements of this Specification Section, provide products listed herein from the following:
 - 1. Basis of Design: Johnsonite/Tarkett
 - 2. Other acceptable manufacturers offering equivalent products.
 - a. Flexco
 - b. Roppe
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS

- A. Vinyl composition tile - Armstrong Standard Excelon tile, 1/8" in thickness, 12" x 12".
- B. Vinyl base: 4" high x rolled length, 1/8" thick with ribbed back. Seams will only be allowed on walls longer than 40'.
- C. Edge guards or Adaptors: Beveled type, matte finish; color as selected by Architect. Johnsonite Model EG-G, H or J. Provide edge guards at all exposed edges. Johnsonite Model CTA-A or CTA-D. Provide adaptors at all dissimilar materials (i.e. vinyl tile and carpet).

2.03 COLORS SELECTION

- A. All colors shall be selected by the Architect from the manufacturer's standard color selections as required to match existing.

2.04 ACCESSORIES

- A. Subfloor Filler: White premix latex; mix with water to produce cementitious paste. "Armstrong" S-180 Latex underlayment.
- B. Primers and Adhesives: Low VOC and waterproof; types recommended by flooring manufacturer for specific materials and as required to maintain product warranty.
- C. Sealer and Finish: Types recommended by resilient flooring materials manufacturer for material type and location.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. When requested by the Architect, schedule and hold a pre-installation meeting prior to start of work on this section as stipulated in Specification Section 01 31 00 to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.
To attend: Architect, Owners Representative, General Contractor, Approved Installer.
- B. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft., and are ready to receive work.
- C. Documented moisture testing must be conducted on ALL concrete substrates, regardless of the grade level and age using both of the following methods.
 - 1. Test method ASTM F-1869 result is to be 5.0 lb. MVTR or lower.
 - 2. Test method ASTM F-2170 result to be less than 75 % RH.
 - 3. Concrete is to exhibit negative alkalinity, carbonization, or dusting.
- D. Beginning of installation means acceptance of existing substrate and site conditions.

3.02 PREPARATION

- A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.
- B. Apply, trowel, and float filler to leave a smooth, flat, hard surface.
- C. Prohibit traffic from area until filler is cured.
- D. Vacuum clean substrate.

3.03 INSTALLATION - TILE MATERIAL

- A. If necessary to install new VCT due to damage caused by other repairs. Install in accordance with manufacturers' instructions.
- B. Mix tile from container to ensure shade variations are consistent.
- C. Spread only enough adhesive to permit installation of materials before initial set.
- D. Set flooring in place, press with heavy roller to attain full adhesion.
- E. Install tile with pattern grain alternating with adjacent unit to produce basket weave pattern unless otherwise directed by the Architect. Allow minimum 1/2 full size tile width at room or area perimeter.
- F. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.
- G. Install edge guards at unprotected or exposed edges, and where flooring terminates.
- H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- I. Provide a maximum of three tile colors per room arranged in a pattern to be determined with colors selected by the Architect.

3.04 INSTALLATION - BASE MATERIAL

- A. Fit joints tight and vertical.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends use premolded units.
- C. Install base on solid backing. Bond tight to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.
- E. Install straight and level to variation of plus or minus 1/8 inch over 10 feet.

- F. Provide coved base at all hard surface flooring and straight base at all carpet.
- G. Provide vinyl base at the toekick of all casework.
The color and type shall match adjacent wall vinyl base in the room unless selected otherwise by the Architect.

3.05 PROTECTION

- A. Prohibit traffic on floor finish for 48 hours after installation.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean surfaces in accordance with manufacturer's instructions.

3.07 INITIAL MAINTENANCE OF VCT FLOORING

- A. The following work shall be performed in accordance with manufacturer's recommended instructions.
 - 1. Vacuum thoroughly
 - 2. Do not wash floor for at least five days after installation.
 - 3. The floor may be cleaned after installation by damp-mopping with a very dilute, neutral detergent solution, carefully scrubbing black marks and excessive soil.
 - 4. Apply one coat of Armstrong S-495 (or equal) commercial floor sealer.
 - 5. Apply a minimum of three coats of Armstrong S-480 (or equal) floor finish to protect floor until regular maintenance procedures can be started.
 - 6. Allow at least 60 minutes drying time between applications of finish.
 - 7. Do not allow traffic on the floor for at least 8 hours after final coat of finish.
 - 8. High speed buff to a glossy finish.

END OF SECTION

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SECTION 09 81 16

SOUND ATTENUATION INSULATION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Sound attenuation insulation for walls.

1.02 SUBMITTALS

- A. Submit product data and manufacturer's installation instructions under provisions of Section 01 33 00.
- B. Sustainable Building Material Submittal:
 - 1. Provide documentation indicating percentages of post-consumer and pre-consumer recycled content.
 - 2. Identify each regional material along with the location of its harvest, extraction, or manufacture.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products under provisions of Section 01 60 00.
- B. Store in a dry, protected area.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Rockwool AFB evo (Acoustical Fire Batt) by Rockwool.
- B. Other acceptable manufacturers offering equivalent products:
 - 1. Owens Corning Thermafiber SAFB
 - 2. Johns Manville
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS

- A. Sound attention batts: Unfaced mineral wool fiber, non-combustible insulation designed for sound attenuation.
3-1/2" thick in partitions in locations as occurring and noted on drawings
- B. Material Properties
 - 1. Compliance and Performance:
 - ASTM C 665 Mineral-Fiber Blanket Thermal Insulation Type 1, Complies
 - ASTM C 553 Mineral Fiber Blanket Thermal Insulation Complies
 - UL Design Nos U305, U311, U317, U411, U412, U448, U465, V417, V418, V419

2. Fire Performance:
 - ASTM E 136 Behaviour of Materials at 750°C (1382°F) Non-Combustible
 - ASTM E84 (UL 723) Surface Burning Characteristics
 - Flame Spread = 0
 - Smoke Developed = 0
3. Acoustical Performance:
 - ASTM E 90 Airborne Sound Transmission Loss Tested
 - ASTM E 413 Rating Sound Insulation Tested
 - ASTM C 423 Sound Absorption Coefficients Tested
 - ASTM E 1050 Impedance and Absorption of Acoustical Materials Tested
4. Air Erosion:
 - UL 181 Maximum Air Velocity 1000 fpm
5. Corrosive Resistance:
 - ASTM C 665 Corrosiveness to Steel Pass
6. Total recycled content to be 40 %.

C. Acoustical Putty

1. QuietPutty 380 manufactured by Pabco Gypsum or equal.
2. Description: Moldable sheets of fire rated, acoustical putty to be used to seal penetrations in partitions that are constructed with sound attenuation insulation. Use putty to maintain the performance of acoustically rated walls at penetrations.
3. Surface burning requirements: (ASTM E84) Flame Spread 15, Smoke developed: 250, Classification: A.
4. One hour fire-rated to UL 1479
5. Install in accordance with manufacturer's instructions.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Verify adjacent materials are dry and ready to receive installation.
- B. Verify mechanical and electrical services within walls have been installed and tested.

3.02 INSTALLATION

- A. Install batt insulation in accordance with manufacturer's instructions.
- B. Install acoustical insulation of 3 1/2" thickness in walls where indicated on the drawings.
- C. Install batt insulation in spaces without gaps or voids.
- D. Trim insulation neatly to fit spaces. Use batts free of damage.
- E. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.
- F. Install acoustical putty in accordance with manufacturer's instructions in locations as noted below.
 1. Acoustical putty is to be installed at all partitions where sound attenuation insulation is being installed so as to maintain the performance of acoustically rated walls.

2. Install as required to seal around the entire back of all electrical boxes penetrating gypsum board.
3. Install as required to seal all gaps where items penetrate gypsum board, such as HVAC ductwork, piping, conduits, cables, etc.

3.03 CLEANING

- A. Clean under provisions of Section 01 70 00.

END OF SECTION

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SECTION 09 91 00

PAINING

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents:
The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.01 SECTION INCLUDES

- A. Finish painting and priming of all items exposed and identified to receive a finish.

1.02 RELATED SECTIONS

- A. Surfaces scheduled or indicated to be painted.
- B. Touch up of shop coats provided under other sections unless specifically included in that section.
- C. Exposed structural steel.
- D. Finish painting of exposed piping, conduit, exposed raceways, metal hardware, exposed equipment including rooftop equipment supplied under mechanical and electrical trades, when such items have not been factory pre-painted.
- E. Examine the specifications for the various other trades and become thoroughly familiar with all their provisions regarding what they are painting. All exposed-to-view surfaces that are left unfinished by the requirements of other specifications shall be painted or finished as a part of this work.

1.03 REFERENCES

- A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D2016 - Test Method for Moisture Content of Wood.
- C. Federal Specifications

1.04 DEFINITIONS

- A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.
- B. The term "paint" as used herein includes enamels, paint, emulsions, varnishes, stains, sealers and other coatings whether used as prime, intermediate or finish coats.

1.05 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.

- B. Submit manufacturer's technical data sheet and Material Safety Data Sheets (MSDS) for each scheduled coating, giving the descriptive data, curing time, mixing, thinning and application instructions. Provide certification that paint was formulated within lead or mercury.
- C. Submit manufacturer's fan deck of color chips for selection of colors by the Architect.
- D. Samples
 - 1. At the request of the Architect, prepare and submit paint samples on the materials he requires for approval.
 - 2. Prepare and submit stained wood samples on the type and quality of wood specified for use on the project as requested by the Architect.
- E. Submit a list of all interior paints and coatings used in the project that are addressed by the Green Seal Standard GS-11 and state the Volatile Organic Compounds (VOC) content for each product.

1.06 QUALIFICATIONS

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with five years experience.
- B. Applicator: Company specializing in commercial painting and finishing with 3 years documented experience.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for flame/fuel/smoke rating requirements for finishes.

1.08 FIELD SAMPLES

- A. At the request of the Architect, provide field sample panel, one complete surface of each color scheme illustrating special coating, color, texture, finish and workmanship.
- B. Locate where directed by the Architect.
- C. If approved, sample area will serve as a minimum standard for Work throughout the building. Accepted sample may remain as part of the Work.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and protect products under provisions of Section 01 60 00.
- B. Deliver all paint materials to the job site ready mixed and in their original containers with all labels intact and legible at time of use.
- C. Store only the approved materials at the job site, and store only in a suitable and designated area restricted to the storage of paint materials and related equipment.
- D. Use all means necessary to insure the safe storage and use of paint materials.

- E. All soiled or used rags, waste and trash must be disposed off site every night and every precaution taken to avoid the danger of fire.
- F. All materials must be stored at above freezing temperature.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent.
- C. Application Temperature for Paints: 50 degrees F minimum, and 95 degrees F maximum.
- D. Application Temperature for Varnish and Other Natural Finishes: 65 degrees F minimum and 90 degrees F maximum.
- E. Provide lighting level of 80 ft. candles measured mid-height at substrate surface.
- F. Do not apply paint to areas where dust is being generated.

1.11 COORDINATION

- A. Coordinate work under provisions of Section 01 31 00.

1.12 EXTRA MATERIALS

- A. Furnish under provisions of Section 01 78 00 extra paint equaling approximately 10% of each color and gloss used in each coating material used, tightly sealed in clearly labeled containers.
- B. The additional material shall be properly packaged for long term storage and delivered to the Owner.

PART 2 - PRODUCTS

2.01 MANUFACTURER:

- A. Subject to compliance with requirements of this Specification Section, provide products listed herein from one of the following:
 - 1. Paint:
 - a. Sherwin Williams
 - b. Pittsburgh Paint (PPG Industries, Inc)
 - c. Benjamin Moore Paint
- B. Substitutions: Under provisions of Section 01 60 00.

2.02 COMPATIBILITY:

- A. All paint materials and equipment shall be compatible in use; finish coats shall be compatible with prime coats; prime coats shall be compatible with the surface to be coated; all tools and equipment shall be compatible with the coating to be applied.
- B. Thinners, when used, shall be only those thinners recommended for that purpose by the manufacturer of the material to be thinned.

2.03 MIXING AND TINTING:

- A. Accomplish job mixing and tinting only when acceptable to the Architect. Mix only in mixing pails placed in suitable sized non-ferrous or oxide resistant metal pans.
- B. Tints and all other additives or thinners shall be used only as recommended by the manufacturer of the paint and as approved by the Architect.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. In the event of discrepancy, immediately notify the Architect.
- C. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 PREPARATION:

- A. General
 - 1. Prior to all surface preparation and painting operations, completely mask, remove or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items in contact with painted surfaces but not schedule to receive paint.
 - 2. Remove all existing loose, flaking and poor condition paint by scraping and then sanding surface. Sand as required to feather edges of remaining paint.
 - 3. Spot prime all exposed nails and other metals that are to be painted with emulsion paints, using a primer recommended by the manufacturer of the coating system.
 - 4. Surface to be painted shall be thoroughly clean and dry. All concrete and masonry work shall be completely cured.
 - 5. All items concealing surfaces to be painted that are readily detachable shall be removed for the painting of said surface. Reinstall upon completion of space.
 - 6. Surfaces in spaces above suspended ceilings and chases are not required to be painted unless otherwise indicated.
 - 7. Doors shall be removed to paint the bottom edges.
 - 8. Provide minimum of one coat of primer and minimum of two coats of finish paint. The shop priming coat, as occurring, shall substitute for the field applied primer coat.

9. Complete coverage is required. Provide additional coats to areas that do not show complete coverage.
 10. All stains (water, smoke, etc.) on existing materials scheduled to be painted are to be primed with a stain blocker primer, Kilz Oderless or equal. Prime entire wall or ceiling to an edge. Provide two coats. This stain blocking primer may substitute for the primer required in the painting schedule.
- B. Preparation of wood surfaces:
1. Clean all wood surfaces until they are free from dirt, oil, and all other foreign substance.
 2. Smooth all finished wood surfaces exposed to view, using the proper sandpaper.
 3. Where so required, use varying degrees of coarseness in sandpaper to produce uniformly textured and unmarred wood surfaces.
 4. On small, dry, seasoned knots, thoroughly scrape and clean the surface and apply one coat of good quality knot-sealer before application of the priming coat.
 5. On large, open, unseasoned knots, scrape off all pitch and thoroughly clean the area, followed by an application of one coat of good quality knot-sealer.
 6. Back prime all wood mouldings and trim.
 7. Fill nail holes, cracks, open joints and other defects with oil based putty after priming coat has dried. Color to match finish color.
- C. Preparation of metal surfaces:
1. Galvanized Metal
 - a. Clean all surfaces thoroughly with solvent until they are completely free from dirt, oil and grease.
 - b. Thoroughly treat the cleaned surface with phosphoric acid etch.
 - c. Remove all excess etching solution and allow to dry completely before application of paint.
 - d. Prepare surface in accordance with recommendations of directions of manufacturer of rust-inhibitive primer.
 - e. New galvanized metal is to be allowed to weather 6 months prior to coating. If weathering is not possible, clean with solvents per manufacturer's instructions, and verify test patch adhesion with Architect.
 2. Other Metals
 - a. Thoroughly clean all surfaces until they are completely free from dust, dirt, oil, loose rust and grease.
 - b. All shop-primed surfaces that have been marred or abraded shall be wire-brushed and touched up with the same material as the shop coat prior to painting of surfaces.
- D. Preparation of Concrete and Masonry
1. Concrete and masonry shall be repaired before painting.
 2. Dirt, fungus, grease and oil shall be removed prior to application of paint by washing with a solution composed of from 2 to 8 ounces of tri-sodium phosphate per gallon of hot water and then rinsing thoroughly with fresh water.

3. Efflorescence shall be removed from concrete and masonry surfaces by scraping, wire brushing and washing with 5 to 10 percent solution of muriatic acid and then washing thoroughly with fresh water.
4. Unless otherwise recommended by the manufacturer of the paint materials as approved, all concrete and masonry surfaces to be painted shall be given a neutralizing treatment consisting of 2 pounds of zinc-sulfate in one gallon of warm water. The neutralizer shall be applied liberally and allowed to dry, following which the surfaces shall be rinsed thoroughly with clean water and allowed to dry for not less than 48 hours before paint is applied.

E. Preparation of Gypsum Wallboard

1. All surfaces must be thoroughly clean and joint treatment dry.
2. Steel corner beads shall be spot primed before water based paint is applied.
3. Do not apply solvent based coatings directly over unpainted wallboard.

3.03 APPLICATION

A. General

1. Apply all paint in accordance with manufacturer's instructions.
2. Do not apply the initial coating until moisture-meter reading of the surface is within limits recommended by the paint materials manufacturer.
3. Allow sufficient drying time between coats in accordance with manufacturer's recommendations.
4. Oil base and Oleo resinous solvent type paints shall be considered dry for recoating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
5. Schedule all cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
6. Sand, dust, and clean between coats to remove all defects visible to the unaided eye from a distance of five feet.
7. Finished surfaces shall be free from runs, drops, ridges, waves, laps, sags and unnecessary brush marks.
8. Slightly vary the color of succeeding coats.
9. Primer and intermediate coats shall be tinted to approximately the tint of finish coats.
10. Damaged painting shall be retouched before applying the succeeding coat.
11. Do not apply additional coats until completed coat has been inspected and approved by the Architect.
12. Only inspected and approved coats of paint will be considered in determining the number of coats applied.
13. Edges of paint abutting other materials or colors shall be clean and sharp with no overlapping.
14. Refinish entire wall where portion of finish has been damaged or is not acceptable.
15. Refinish all woodwork that has been removed and reset.
16. Paint all exposed, plastic drain pipes, electrical conduits, uninsulated metal piping, ceiling & wall access panels, sprinkler piping and ductwork, unless otherwise noted. Verify with Architect prior to painting these items.
17. Colors will be selected by Architect from manufacturer's full color palette.

18. Unlimited number of different colors allowed per project. Multiple colors are allowed per room. Opposite sides of door frames, window frames and doors may be painted different colors at Architect's discretion. Number of colors is to be determined by Architect and included in a color schedule that will be assembled after submittal of color sample fanex by the General Contractor prior to commencement of work.
19. All steel door frames are to be painted using a brush or roller and back-brushed.
20. Spray painting is not allowed unless all sprayed surfaces are back-brushed using brushes or rollers.
21. NOTE: Where all existing conduits, boxes, devices and equipment are removed, the wall & ceiling surfaces are to have all holes filled/patched and spot painted. Provide paint color and sheen as required to match existing surrounding area.

3.04 CLEANING

- A. Prevent accidental spilling of paint materials and, in event of such spill, immediately remove all spilled material, the waste of equipment used to clean up the spill, and wash the surfaces to their original undamaged condition.
- B. After completion of the painting work, all glass shall be cleaned on both sides by professional window cleaners. The use of acid solution or water containing caustic soaps will not be permitted. The edge of compound shall not be disturbed by scrapers. Upon completion of contract, the glass shall be left whole, free of any defacements or rattle and shall be clean on both sides.
- C. Prior to final inspection visually inspect all surfaces and remove all paint and traces of paint from surfaces not scheduled to be painted.
- D. Paint storage space shall be thoroughly cleaned following the completion of all work.
- E. All waste materials shall be disposed of properly and in accordance with all Federal, State, and Local regulations. Do not dispose of waste materials in the building sanitary waste system.

3.05 WASTE MANAGEMENT

- A. Set aside extra paint for future color matches. All paint unused by the Contractor is to be delivered to the Owner in sealed containers.
- B. Close and tightly seal all partly used paint and finish containers and store in a well-ventilated, safe area at moderate temperature.
- C. Do not dispose of paints or solvents by pouring on ground. Place in designated containers for proper disposal.

3.06 PAINTING SCHEDULE

A. Exterior: Based on Sherwin Williams Paints unless noted otherwise.

1. Wood
1st Coat: S-W A-100 Exterior Fast Dry Alkyd Wood Primer
(4 mils wet, 2.2 mils dry)
2nd & 3rd Coats: S-W Resilience Latex Satin K43 Series
(4 mils wet, 1.52 mils dry per coat)

2. Ferrous Metals (doors, frames, steel)
1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1300 Series
(5-10 mils wet, 2-4 mils dry)
2nd & 3rd Coats: S-W Pro Industrial DTM Acrylic Semi-Gloss, B66-1150 Series
(6.0 mils wet, 2.5mils dry)

3. Galvanized Metal (designated to be painted)
1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1300 Series
(5-10 mils wet, 2-4 mils dry)
2nd & 3rd Coats: S-W All Surface Alkyd Enamel, A11 Series
(4 mils wet, 1.6 mils dry per coat)

4. Concrete and Masonry Walls
1st Coat: S-W Loxon Block Surfacer
(50 – 100 sq ft/gal)
2nd & 3rd Coats: S-W Resilience Latex Satin K43 Series
(4 mils wet, 1.52 mils dry per coat)

5. PVC, Plastic
1st Coat: 1 coat S-W Adhesion Primer latex, B51W8050
(4 mils wet, 1.7 mils dry)
2nd & 3rd Coats: 2 coats S-W Resilience Exterior Gloss K44
(4 mils wet, 1.6 mils dry per coat)

B. Interior: Based on Sherwin Williams Paints unless noted otherwise.

1. CEMENT - (Poured Concrete, Precast Concrete, Unglazed Brick, Cement Board, Cast-In-Place)
Eg-Shel / Satin Finish
1st Coat: S-W Loxon Block Surfacer
(16 mils wet, 8 mils dry)
2nd & 3rd Coats: S-W ProMar 200 Zero VOC Latex Eg-Shel B20-2600 Series,
(4 mils wet, 1.6 mils dry per coat)

2. METAL - (Doors & frames, Ferrous Metal, steel pipe railings) (exposed, uninsulated metal piping and ductwork)
Semi-gloss Finish
1st Coat: S-W ProCryl Universal Primer, B66-310 Series (110 g/L)
(2-4 mils dry)
2nd & 3rd Coats: S-W Pro Industrial DTM Acrylic Semi-gloss B66-1150 Series
(6.0 mils wet, 2.5mils dry)

3. METAL - (Open to structure ceilings)
Dryfall Waterborne Topcoats
Eg-Shell Finish
1st Coat: S-W ProCryl Universal Primer, B66-310 Series (110 g/L)
(2-4 mils dry)
2nd & 3rd Coats: S-W Waterborne Acrylic Dry Fall, B42W2 (58 g/L)

4. WOOD - (Trim)
Semi-gloss
1st Coat: S-W Premium Wall & Wood Primer B28 Series
(4 mils wet, 1.5 mils dry per coat)
2nd & 3rd Coats: S-W ProMar 200 Zero VOC Latex Semi-gloss B31-2600 Series
(4 mils wet,1.7 mils dry per coat)

5. DRYWALL - (Walls, Gypsum Board, etc.)
Eg-Shell / Satin Finish
1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600
(4 mils wet, 1.5 mils dry).
2nd & 3rd Coats: S-W ProMar 200 Zero VOC Latex Eg-Shel B20-2600 Series
(4 mils wet,1.7 mils dry per coat)

6. CEILINGS – (Gypsum Board or Plaster)
Flat Finish
1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600
(4 mils wet, 1.5 mils dry).
2nd & 3rd Coats: S-W ProMar Ceiling Paint Latex Flat, A27W05050 Series
(4 mils wet, 1.2 mils dry per coat).

7. CONCRETE BLOCK
Semi-gloss Finish
1st Coat: S-W Loxon Block Surfacer
(16 mils wet, 8 mils dry)
2nd & 3rd Coats: S-W ProMar 200 Zero VOC Latex Semi-gloss B31-2600 Series
(4 mils wet,1.7 mils dry per coat)

END OF SECTION

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SECTION 10 14 00

SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Documents: The Drawings and general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 Requirements, apply to the work in this Section.

1.2 SECTION INCLUDES

- A. Miscellaneous interior and exterior building signage.
- B. **NOTE:** All interior building signage listed herein is to be included under Allowance No. 1.

1.3 SUBMITTALS

- A. Submittal Procedures: Submit product data and samples under provisions of Section 01 33 00.
 - 1. Shop Drawings:
 - a. Indicate sign styles, letter font, terminology, foreground and background colors, locations, and overall dimensions of each sign.
 - b. Setting details for method of installation.
 - 2. Samples: Submit two sample signs illustrating type, style, letter font, and colors specified; method of attachment.
 - 3. Assurance/Control Submittals:
 - a. Certificates: Manufacturer's certificate that products meet or exceed specified requirements.
 - b. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.
 - c. Manufacturer's Instructions: Include installation template, attachment devices, and procedures for care of finished surfaces.

1.4 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing products specified with minimum 5 years documented experience.
 - 2. Installer: Company specializing in performing the Work of the Section with minimum 5 years documented experience.

1.5 REGULATORY REQUIREMENTS

- A. Conform to all applicable Federal, State and local codes and laws.
- B. All sign design and installation is to meet the requirements of ICC A117.1 and the Rhode Island State Building Code, latest edition and the ADA Standards for Accessible Design, latest edition.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products under provisions of Section 01 60 00.

- B. Deliver materials to project site in manufacturer's original unopened protective packaging.
- C. Identify contents, manufacturer, brand name, thermal values, and applicable standards.
- D. Handle as required to prevent damage.

1.7 WARRANTY

- A. Provide manufacturer's standard warranty (minimum of one year) for the specified product under the provisions of Section 01 78 00.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
 - 1. ACE Sign Systems
 - 2. ASI Sign Systems
 - 3. Best Sign Systems
 - 4. Approved fabricator.
- B. Substitutions: Under provisions of Section 01 60 00.

2.2 MATERIALS

- A. Interior signage.
 - 1. Solid Polycarbonate Sheet: Thickness to be manufacturer's standard with minimum thickness of 3/16".
 - 2. Impact Resistance: 16 ft-lbf/in. per ASTM D 256, Method A.
 - 3. Tensile Strength: 9000 lbf/sq. in. per ASTM D 638.
 - 4. Flexural Modulus of Elasticity: 340,000 lbf/sq. in. per ASTM D 790.
 - 5. Heat Deflection: 265 deg F_e at 264 lbf/sq. in. per ASTM D 648.
 - 6. Abrasion Resistance: 1.5 percent maximum haze increase for 100 revolutions of a Taber abraser with a load of 500 g per ASTM D 1044.

2.3 SIGNAGE

- A. Interior Signage:
 - 1. Interior room signs shall have room names and/or numbers composing of minimum one inch high Helvetica Medium (uppercase) lettering that is 1/32 inch raised above their background and is to be duplicated in Braille.
 - 2. Signage design and installation is to meet the requirements of the applicable accessibility code.
 - 3. Size: As shown on drawings and noted in schedule listed herein.
 - 4. Material: Polycarbonate
 - 5. Color: To be selected by Architect from manufacturer's full color range.
 - 6. Install with exposed stainless steel, theft resistant screw fasteners.
 - 7. Pictograms and Symbols of Accessibility:
 - a. Pictograms and Symbols of Accessibility are to meet the requirements of the applicable accessibility code.

- b. Material: Polycarbonate
- c. Color: To be selected by Architect from manufacturer full color range.

2.4 FASTENERS AND OTHER MATERIALS

- A. Provide non-corrosive fasteners, hangers, and mounting devices which are compatible with sign material and finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of existing conditions before starting work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive work.
 - 1. Examine walls, and other areas scheduled to receive signs for conditions that would affect quality and execution of work.
- C. By beginning work, contractor accepts conditions and assumes responsibility of correcting unsuitable conditions encountered at no additional cost to the client.

3.2 INSTALLATION

- A. Install signage in accordance with manufacturer's published instructions.
- B. Install sign units and components at the locations shown or scheduled, securely mounted to wall. Attach signs to substrates in accordance with the manufacturer's instructions.
- C. Install level, plumb, and at the proper height. Cooperate with other trades for installation of sign units to finish surfaces.
- D. Install room signs on wall on latch side of doors at height required by state and federal accessibility codes.
- E. Where polycarbonate signage is installed on exterior surfaces, exposed, theft resistant, screw fasteners are to be used.
- F. Coordinate and confirm location of all signs with Architect prior to installation.

3.3 CONSTRUCTION

- A. Interface with Other Work:
 - 1. Furnish full-size spacing templates for individually bundled letters and numbers for coordination with work of other trades.

3.4 FIELD QUALITY CONTROL

- A. Inspect signage locations, attachments, and messages to verify installation conforms to drawings.
- B. Verify actual sign locations and terminology with Architect prior to ordering.

3.5 SIGNAGE SCHEDULE

- A. Interior signage: Provide and install signs as noted below with examples as shown on drawing AG1.1. Coordinate actual pictograms, terminology and locations with Architect. Content of signs will be similar to room names listed on floor plan drawings.
 - 1. Type "A" signs: 8"h x 6" w with pictographs, lettering and braille.
Quantity: Seven (7)

END OF SECTION

SECTION 10 21 1.19

PLASTIC TOILET PARTITIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install all plastic toilet partitions with doors, accessories and appurtenances, complete, in accordance with the specifications and drawings. Style to be floor mounted and overhead braced.

1.02 RELATED SECTIONS

- A. Section 05 50 00 - Miscellaneous Metal Work

1.03 SUBMITTALS

- A. Submit shop drawings and product data and color samples under provisions of Section 01 33 00.

1.04 REGULATORY REQUIREMENTS

- A. Meet all State and Federal Handicap Accessibility and fire codes.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.

1.06 COORDINATION

- A. Coordinate work under provisions of Section 01 31 00.

1.07 WARRANTY

- A. Provide a twenty five (25) year warranty under provisions of Section 01 78 00.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. ASI Accurate Partitions Corporation
- B. Other acceptable manufacturers offering equivalent products:
 - 1. Scranton Products (Santana/Comtec/Capitol)
 - 2. AMPCO

2.02 MATERIALS

- A. Door, Panels, Pilaster and Urinal Screens
1. Shall be 1" thick (door and panels 55" high, pilasters 82" high. High-Density Polyethylene (HDPE) polymer that is water resistant and non-absorbent.
 2. The HDPE material shall have homogenous color throughout each component with 1/4" machined edges for uniformity. Surface finish shall resist markings from pens, pencils and other writing instruments.
 3. Color to be selected by Architect from manufacturer's standard colors.
NOTE: Minimum of 8 colors meeting the noted fire rating requirements.
 4. Trim shoes to be satin finish stainless steel.
 5. HDPE material is to have a Class A or B rating per ASTM E-84 and pass NFPA 286. Submit test documentation confirming compliance.
- B. Hardware
1. Hinges:
 - a. Continuous Hinge: Doors shall be hung on a continuous contact piano hinge, made of satin, anodized extruded aluminum and shall weigh not less than 1.5 pounds per foot. Knuckles shall have nylon separators. Pivot pin shall be 1/4" type 304 stainless steel.
All fasteners shall be 3/4" tamperproof screws located 8" on-center on door and pilaster.
Hinge shall have internal spring which is adjustable to hold door closed.
 2. Brackets: All panel brackets are to be continuous, full height, Satin anodized Type 6463-T5 aluminum, attached with tamperproof screws. Panels and bracket connection shall be through bolted with tamper resistant barrel nuts and shoulder screws.
 3. Latches: All slide latches, strikes, door pulls, keepers and coat hook/bumpers are to be manufacturer's standard hardware with a brushed aluminum alloy to resist corrosion and through bolted with tamper resistant barrel nuts and shoulder screws.
Latches for accessible toilet compartments are to meet all state code requirements for accessibility. All accessible toilet compartments are to have a handle on both sides of door.
 4. Compartments shall be supplied with all hardware and fasteners for a complete installation.
- C. Construction Design
1. Partitions shall be anchored to the floor with a 1/4" x 1" stainless steel mounting bar attached to the bottom of the pilaster. Floor anchoring system shall be secured to the floor with 3/8" stainless steel anchors. The mounting system shall be capable of leveling as required.
 - a. The mounting system shall be concealed by stainless steel trim shoes secured with two metal clips incorporated into the floor anchor assembly.

- b. Provide clear satin anodized aluminum heat sink channel along bottom edge of all partition panels and doors.
2. Aluminum headrail with anti-grip profile shall provide overhead bracing and span all compartments and brace the end pilaster to the back wall. Aluminum to be clear satin anodized.
3. Urinal screens are to be attached to the wall with a continuous aluminum bracket and floor to ceiling mounted with a 1-3/4" x 1-3/4" aluminum post. Provide structure above ceiling as required to rigidly brace post. Screen size to be 24" x 55" unless noted otherwise on drawings.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install partitions rigid, straight, plumb and level in accordance with manufacturer's instructions. Set units with not more than 1/2" between pilasters and panels and not more than 3/4" between panels and walls.
- B. Secure to structural concrete floor and walls with tamperproof screws and conical plastic anchors (Provide 2" x 6" wood blocking for fastening partitions to drywall construction).
- C. Evidence of drilling in floors and walls shall be concealed in the finished work.
- D. Adjust and lubricate hardware for proper operation after installation.
 1. Hinges on in-swing doors are factory set to hold doors in the open position when unlatched as shown on drawings.
 2. Hinges on out-swing doors are factory set to return to the fully closed position.

3.02 CLEANING

- A. Clean work under provisions of Section 01 70 00.
- B. Remove protective plastic coating.
- C. Clean exposed surfaces of compartment systems using materials and methods recommended by manufacturer and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION

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SECTION 10 28 13

TOILET ROOM ACCESSORIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The furnishing and installation of toilet room accessories as shown on drawings and herein specified.

1.02 RELATED SECTIONS

- A. Section 10 21 13.19 Plastic toilet partitions

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00
- B. Product data: Include manufacturer's illustration of item and installation instructions.
- C. Samples: Provide one sample of item if requested by the Architect. (Sample will be returned)

1.04 QUALITY CONTROL

- A. Work is to be performed in accordance with Section 01 45 00.

1.05 REGULATORY REQUIREMENTS

- A. Conform to all applicable Federal, State and local codes and laws including the state accessibility code for location and height requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect, and handle products to site under provisions of Section 01 60 00.

1.07 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on drawings. Any inconsistencies or conflicts shall be reported to the Architect prior to installation.

1.08 COORDINATION

- A. Coordinate work under provisions of Section 01 31 00.
- B. Coordinate the work with finish installers, and contractor for all wall openings, blocking, anchors, etc.
- C. The Owner will supply the surface mounted paper towel dispensers, soap dispensers, hand sanitizer dispensers, sanitary napkin disposal and toilet tissue dispensers from their Vendor. Coordinate with

the Owner for receipt of these items. Contractor is to install them in locations shown on the drawings and as listed in this section's schedule. All installations are to meet state accessibility code location and height requirements. Contractor is to provide all blocking as required in stud walls.

Note that some of these Owner-supplied accessories may be reused existing accessories relocated to new locations. See drawings for additional information and coordinate with Owner.

1.09 WARRANTY

- A. Provide warranty under provisions of Section 01 78 00.
- B. The bathroom accessories shall be warranted for one year from the date of purchase.

1.10 OPERATION AND MAINTENANCE

- A. All keys, tools and instruction sheets supplied by the manufacturer are to be turned over to the owner.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Bobrick Washroom Equipment, Inc.
- B. Other acceptable manufacturers offering equivalent products.
 - 1. American Specialties, Inc.
 - 2. A&J Washroom Accessories, Inc.

2.02 PRODUCT LIST

- A. Mirror (Bobrick B-2908 or ASI 0600-B) - Stainless steel angle frame with tempered glass mirror. Provide concealed wall hanger with theft resistant locking device.
- B. Grab Bars
 - 1. All grab bars are 18 gauge, satin finish, with concealed mounting plate and theft resistant screws. (ASI has a snap-on flange cover)
 - a. Straight grab bar, 1-1/2" diameter (Bobrick B-6806 or ASI 3801)
- C. Robe hook
(Bobrick B-6707 or ASI Type 7340)
- D. Sanitary napkin disposal
(Bobrick B-270 or ASI Type 20852) surface mounted
- E. Janitor's shelf and hook strip
(Bobrick B-239 or ASI Type 1308-3) 34" long with shelf, 3 rubber mop holders and 4 hooks

2.03 MATERIALS

- A. Sheet Steel: ASTM A366, cold rolled stretcher leveled; 125 oz/sq. ft. galvanized coating.
- B. Stainless Steel Sheet: ASTM A167, commercial grade, 22 gauge.
- C. Stainless Steel Tubing: ASTM A269, commercial grade, seamless welded.
- D. Adhesive: Epoxy type contact cement.
- E. Fasteners, Screws, and Bolts: Hot dip galvanized. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.04 FINISHING

- A. All accessories shall be stainless steel with a satin finish except if specified otherwise in the schedule.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Provide rough-in dimensions and/or templates to site as required.
- B. Verify exact location of accessories with the Architect prior to installation.
- C. Provide all blocking, backup, anchors, mounting kits, etc. as required to install accessories.

3.02 INSTALLATION

- A. Install accessories in accordance with manufacturer's specifications and instructions.
- B. Install accessories plumb, square and level.
- C. Accessories shall be anchored securely.
- D. All items shall be attached with theft resistant fasteners.

3.03 CLEANING

- A. Clean work under provisions of Section 01 70 00.
- B. Protective plastic cover shall remain on accessories until all finishes and tile cleaning is completed.
- C. Upon installation and cleaning by all other trades, the protective covers may be removed and the accessories cleaned as recommended by the manufacturer.
- D. Do not use steel wool or other abrasives on stainless steel.

3.04 ACCESSORY SCHEDULE

NOTE: Contractor is to compare the quantity of fixtures shown on the drawings and as listed herein and use the greater quantity.

NOTE: Contractor is to install salvaged accessories first then Owner will provide new accessories as required to meet the quantities shown on the drawings and listed in this specification. Contractor is to install all salvaged and new accessories.

Girl's Toilet Room 130, 136

Each to have:

- 1 42" grab bar
- 1 36" grab bar
- 1 18" grab bar
- 2 mirrors (18" x 36")
- 5 Sanitary napkin disposals
- 1 soap dispenser (Supplied by Owner)
- 5 toilet tissue dispensers (Supplied by Owner)
- 2 paper towel dispensers (Supplied by Owner)

Men's Toilet Room 124, 144

Each to have:

- 1 42" grab bar
- 1 36" grab bar
- 1 18" grab bar
- 2 mirrors (18" x 36")
- 1 soap dispenser (Supplied by Owner)
- 2 toilet tissue dispensers (Supplied by Owner)
- 2 paper towel dispensers (Supplied by Owner)

Unisex Toilet Room 115

- 1 42" grab bar
- 1 36" grab bar
- 1 18" grab bar
- 1 mirror (18" x 36")
- 1 toilet tissue dispenser (Supplied by Owner)
- 1 soap dispenser (Supplied by Owner)
- 1 paper towel dispenser (Supplied by Owner)
- 1 Sanitary napkin disposal
- 1 Robe Hook on door

Janitor Closet 114

- 1 Janitor's shelf and hook strip

END OF SECTION

SECTION 22 00 00
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SECTION 22 00 00

PLUMBING

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS AND REFERENCES

- A. Include "General Requirements" and applicable parts of Division 1 as part of this section.
- B. Examine all other sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this section. Where paragraphs of this section conflict with similar paragraphs of Division 1, requirements of this section shall prevail.
- C. Coordinate work with that of all other trades affecting, or affected by work of this section. Cooperate with such trades to assure the steady progress of all work under the Contract.
- D. The Plumbing Subcontractor shall be responsible for filing all documents, payment of all fees, and securing of all inspections and approvals necessary for the work of this section.
- E. The Plumbing Subcontractor shall carry in the Bid Price all Utility Company and Municipal back charges for all materials furnished and work performed by them in conjunction with this Contract and pay same to the respective agency upon demand. The Plumbing Subcontractor shall not be entitled to additional compensation after the submittal of his bid price should he fail, for any reason, to obtain the total back charge costs to be incurred by the local utility companies or municipal agencies.

1.2 DEFINITIONS

- A. As used in this section, "provide" means "furnish and install", and "POS" means "Provided Under Other Sections".
- B. As used in the Contract Drawings and Specifications for Plumbing work, certain non-technical words shall be understood to have specific meanings as follows, regardless of indications to the contrary in the General Conditions of other documents governing the Plumbing work.
 - 1. "Furnish" means: Purchase and deliver to the project site complete with every necessary appurtenance and support, all as part of the Plumbing work. Purchasing shall include payment of all sales taxes and other surcharges as may be required to assure that purchased item(s) are free of all liens, claims, or encumbrances.
 - 2. "Install" means: Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project, all as part of the Plumbing work.
 - 3. "Provide" means: "Furnish" and "Install".
 - 4. "New" means: Manufactured within the past two (2) years and never before used.
- C. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any plumbing item in the Contract Drawings or Specifications for Plumbing work carries with it the instruction to furnish, install and connect the item as part of the Plumbing work, regardless of whether or not this instruction is explicitly stated.
- D. It shall be understood that the Specifications and Drawings for Plumbing work are complimentary and are to be taken together for a complete interpretation of the Plumbing work except that indications on the Contract Drawings, which refer to an individual element of work, take precedence over the Specifications where they conflict.

1.3 SCOPE

- A. Perform work and provide material and equipment as shown on Contract Drawings and as specified or indicated in this Section of the Specifications. Completely coordinate work of this Section with work of other trades and provide a complete and fully functional installation.
1. Domestic water piping system.
 2. Interior sanitary waste and vent piping system.
 3. Plumbing fixtures and trim.
 4. Hose bibbs.
 5. Insulation.
 6. Valves.
 7. Water hammer arresters.
 8. Fittings unions, flanges and couplings.
 9. Flashing of floor drains.
 10. Hangers, plates and inserts.
 11. Cleaning, testing and disinfection of piping systems.
 12. All supplementary steel for piping and equipment support.
 13. Guarantees.
 14. Drilling for installation of inserts.
 15. Vibration isolator and flexible connections.
 16. Core drilling.
 17. Fire seal off all penetrations in floors and walls to the rating of the barrier.
- B. Drawings and Specifications form complimentary requirements; provide work specified and not shown, and work shown and not specified as though explicitly required by both. Although work is not specifically shown or specified, provide supplementary or miscellaneous items, appurtenances, devices and materials obviously necessary for a sound, secure and complete installation.
- C. Give notices, file plans, obtain permits and licenses, pay fees and back charges, and obtain necessary approvals from Authorities Having Jurisdiction as required to perform work in accordance with all legal requirements and with Specifications, Drawings, Addenda and Change Orders, all of which are part of Contract Documents.
- D. Before submitting bid, visit and carefully examine site to identify existing conditions and difficulties that will affect work of this Section. No extra payment will be allowed for additional work caused by unfamiliarity with site conditions that are visible or readily construed by experienced observer. Site visit is particularly important because this is renovation work.
- E. Before starting work in a particular area of the project, visit site and examine conditions under which work must be performed including preparatory work done under other Sections or Contracts or by Owner. Report conditions that might affect work adversely in writing through Contractor to Architect. Do not proceed with work until defects have been corrected and conditions are satisfactory. Commencement of work shall be construed as complete acceptance of existing and preparatory work.
- F. Work to be done under this section is shown on the following Drawings:

1.4 RELATED WORK UNDER OTHER SECTIONS

- A. The following items are not included in this section and will be performed under other sections.
 - 1. Temporary Facilities.
 - 2. Masonry: All openings in masonry walls.
 - 3. Waterproofing, Dampproofing and Caulking.
 - 4. Painting: All painting except as specified herein.
 - 5. Finish Carpentry and Millwork.
 - 6. Steel Doors and Frames.
 - 7. Finish Hardware.
 - 8. Electrical.
 - 9. HVAC.
 - 10. Furnishing of toilet accessories such as toilet paper holders, mirrors and soap dispensers.

1.5 REGULATORY REQUIREMENTS

- A. Comply with all applicable Federal and State laws, and all Local Codes, By-laws and Ordinances.
- B. Where provisions of the Contract Documents conflict with any Codes, Rules or Regulations, the latter shall govern. Where the Contract requirements are in excess of applicable Codes, Rules or Regulations, the Contract provisions shall govern unless the Architect rules otherwise.
- C. Request inspections from Authorities Having Jurisdiction, obtain all permits and pay for all fees and inspection certificates as applicable and/or required. All permits and certificates shall be turned over to the Owner at the completion of the work. Copies of permits shall be given to the Resident Engineer prior to the start of work.
- D. Unless otherwise specified or indicated, materials and workmanship and equipment performance shall conform with the latest edition of the following standards, Codes, Specifications, Requirements and Regulations:
 - 1. Local and State Building, Plumbing, Mechanical, Electrical, Fire and Health Department Codes.
 - 2. American Insurance Association (AIA), formerly National Board of Fire Underwriters.
 - 3. Occupational Safety and Health Act (OSHA).
 - 4. Factory Mutual Association (FM).
 - 5. Underwriter's Laboratories (UL).
- E. All Plumbing work shall meet or exceed any other State and Local Codes and/or Authorities Having Jurisdiction including all other standards indicated herein.

1.6 SUBMITTALS

- A. This paragraph shall supplement Division 1.
- B. Definitions:
 - 1. Shop Drawings: Information prepared by the Contractor to illustrate portions of the work in more detail than shown in the Contract Documents.

2. Coordination Drawings: Detailed, large-scale layout Shop Drawings showing HVAC, Electrical, Plumbing and Fire Protection work superimposed to identify conflicts and ensure inter-coordination of Mechanical, Electrical, Architectural, Structural and other work.

C. Submittals Procedures and Format:

1. Review submittal packages for compliance with Contract Documents and then submit to Architect for review. Submit transparency and two (2) blue or black-line reproductions of each Shop Drawing larger than 8-1/2" x 11". Submit eight (8) sets of each smaller shop drawing. After review, transparency original of each large Shop Drawing and six (6) sets of each small shop drawing will be returned with reviewer's marks. Electronically submitted shop drawings are acceptable.
2. Each Shop Drawing shall indicate in title block, and each Product Data package shall indicate on cover sheet, the following information:
 - a. Title.
 - b. Name and location of project.
 - c. Names of Architect, Engineer, Contractor and Subcontractor(s).
 - d. Names of Manufacturer, Supplier, Vendor, etc.
 - e. Date of submittal.
 - f. Whether original submittal or resubmitted.
3. Shop Drawings showing Manufacturer's product data shall contain detailed dimensional Drawings, accurate and complete description of materials of construction, Manufacturer's published performance characteristics and capacity ratings (performance data alone is not acceptable), plumbing requirements and wiring diagrams. Drawings shall clearly indicate location (terminal block or wire number), voltage and function for all field terminations, and other information necessary to demonstrate compliance with all requirements of Contract Documents.

D. Acceptable Manufacturers:

1. The Architect's Plumbing design for each project is based on the single Manufacturer listed in the schedule or shown on the Contract Drawings. In Division 22 00 00 of these Specifications certain "Alternate Manufacturers" are listed as being acceptable. These are acceptable only if, as a minimum, they:
 - a. Accepted by Architect and Engineer.
 - b. Meet all performance criteria listed in the schedules and outlined in the Specifications.
 - c. Have equivalent operating characteristics to those called for in the Specifications.
 - d. Fit within the available space it was designed for, including space for maintenance and component removal, with no modifications to either the space or the product. Clearances to walls, ceilings and other equipment will be at least equal to those shown on the Contract Documents. The fact that a Manufacturer's name appears as acceptable shall not be taken to mean the Architect has determined that the Manufacturer's products will fit within the available space. This determination is solely the responsibility of the Contractor.
 - e. For equipment mounted in areas where structural matters are a consideration, the products must have a weight no greater than the product listed in the schedules or Specifications.
 - f. Products must adhere to all architectural considerations including, but not limited to, being the same size and of the same physical appearance as scheduled or specified products.

- E. Substitutions: Substitution of products by Manufacturers other than those listed shall only be done in accordance with subparagraph “F” “Substitutions and Deviations”.
- F. Substitutions and Deviations:
 - 1. Deviations from the Contract Documents and the substitution of materials or equipment relative to the “Acceptable Manufacturers” referred to above, shall be requested individually in writing whether deviations result from field conditions, standard shop practice, or other cause. Submit letter with transmittal of Shop Drawings which flags the substitution or deviation to the attention of the Architect. The letter shall describe changes in the system shown and physical characteristics (connections to adjacent materials, plumbing services, service access requirements, and other characteristics), and differences in operating characteristics or cycles.
 - 2. Without letters flagging the substitution or deviation to the Architect, it is possible that the Architect may not notice such substitution or deviation or may not realize its ramifications. Therefore, if such letters are not submitted to the Architect, the Contractor shall hold the Architect and his consultants harmless for any and all adverse consequences resulting from the deviations being implemented. Adverse consequences shall include, but not be limited to, excessive noise, excessive maintenance, shortened longevity, spatial coordination problems, and inadequate performance versus scheduled design. This shall apply regardless of whether the Architect has reviewed or approved Shop Drawings containing the deviation, and will be strictly enforced.
 - 3. Do not request substitute materials or equipment unless identical material or equipment has been operated successfully for at least three (3) consecutive years. Such materials and equipment shall be a regular cataloged item shown in the current catalog of the Manufacturer. When deviation or substitution is permitted, coordinate fully with related changes to Architectural, Structural, Plumbing, Fire Protection, Mechanical, and other work. Ensure that related changes necessary for coordination of substituted items are made within the Contract Price. Assume full responsibility for safety, operation and performance of the altered system.
 - 4. Substitutions of equipment, systems, etc. requiring approval of local Authorities must comply with such regulations and be filed by the Contractor (should filing be necessary).
 - 5. Consideration will not be given to claims that the substituted item meets the performance requirements with lesser construction. Performance, as delineated in schedules and in the Specifications, shall be interpreted as minimum performance.
 - 6. Approval of proposed deviations or substitutions, if any, will be made at discretion of Architect.
 - 7. If equipment is proposed for substitution that is not tested and rated according to industry-wide standards, the Architect shall have the right to have performance tests completed, at the Contractor’s expense, to confirm the Manufacturer’s performance claims.
- G. Submittal Notations: Submittals will be returned from the Architect marked as illustrated below:

<input type="checkbox"/> NO EXCEPTION TAKEN	<input type="checkbox"/> ACCEPTED AS NOTED
<input type="checkbox"/> NOT ACCEPTED	<input type="checkbox"/> REVISE AND RESUBMIT

- 1. Checking is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action shown is subject to the requirements of the Contract Drawings and Specifications. Contractor is responsible for dimensions which shall be confirmed and correlated at the job site; fabrication process and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of

his work.

- H. Schedule: Incorporated the Shop Drawing review period into the construction schedule so that work is not delayed. Contractor shall assume full responsibility for delays caused by not incorporating the following Shop Drawing review time requirements into his project schedule. Allow at least ten (10) working days, exclusive of transmittal time, for review each time a Shop Drawing is submitted or resubmitted with the exception that fifteen (15) working days, exclusive of transmittal time, are required for the following:
 - I. Schedule:
 - 1. Copies of all backflow preventer permits.
 - 2. Certification of domestic water system disinfection.
 - 3. Coordination Drawings, if required by this Specification.
 - 4. Adjustment and balancing certification.
 - 5. If more than five (5) Shop Drawings of this trade are received in one (1) calendar week.
 - J. List of Proposed Equipment and Materials: Within four (4) weeks after Award of Contract and before ordering materials or equipment, submit a complete list of proposed materials and equipment and indicate Manufacturer's names and addresses. No consideration will be given to partial lists submitted out of sequence.
 - K. Responsibility:
 - 1. The intent of submittal review is to check for capacity, rating, and certain construction features. Contractor shall ensure that work meets requirements of the Contract Documents regarding information that pertains to fabrication processes or means, methods, techniques, sequences and procedures of construction; and for coordination of work of this and other Sections. Work shall comply with submittals marked "REVIEWED" to extent that they agree with the Contract Documents. Submittal review shall not diminish responsibility under this Contract for dimensional coordination, quantities, installation, wiring, supports and access for service, nor the Shop Drawing errors or deviations from requirements of the Contract Documents. The Architect's noting of some errors while overlooking others will not excuse the Contractor for proceeding in error. Contract Documents requirements are not limited, waived, nor superseded in any way by review.
 - 2. Inform Subcontractors, Manufacturers, Suppliers, etc. of scope and limited nature of review process and enforce compliance with the Contract Documents.
 - L. Material and equipment requiring Shop Drawing Submittals shall include but not be limited to:
 - 1. Plumbing fixtures and trim.
 - 2. Hose bibbs.
 - 3. Piping.
 - 4. Fittings, unions, flanges and couplings.
 - 5. Insulation.
 - 6. Sleeve packing.
 - 7. Valves
 - 8. Water hammer arresters.
 - 9. Flashing of floor drains.

10. Hangers, plates and inserts.
11. Vibration isolation and flexible connections.
12. Fire-rated penetration assemblies (ASTM E814, UL 1479).
13. Access panels.
14. Shop Drawings shall be submitted as a single bound package, organized and titled.

1.7 SURVEYS AND MEASUREMENTS

- A. Base all required measurements, both horizontal and vertical, on reference points established by the General Contractor and be responsible for the correct laying out of the Plumbing work. In the event of a discrepancy between actual measurements and those indicated, notify the General Contractor in writing. Do not proceed with the work required until written instructions have been issued by the General Contractor.

1.8 COORDINATION

- A. HVAC, Plumbing and Electrical Drawings are diagrammatic. They indicate general arrangements of Mechanical and Electrical systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with Structural and other trades and to meet Architectural requirements.
- B. Work shall be performed in cooperation with other trades on the project and so scheduled as to allow speedy and efficient completion of the work.
- C. Furnish to other trades advance information on locations and sizes of all frames, boxes, sleeves and openings needed for their work. Furnish information and Shop Drawings necessary to allow trades affected by the work to install their work properly and without delay.
- D. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Architect. Where the Plumbing work shall interfere with the work of other trades, assist in coordinating the space conditions to make satisfactory adjustments before installation. Without extra cost to the Owner, make reasonable modifications to the work as required by normal Structural interferences. Pay the General Contractor for additional openings, or relocating and/or enlarging existing openings through concrete floors, walls, beams and roof required for any work which was not properly coordinated. Maintain maximum headroom at all locations. All piping, duct, conduit, and associated components to be as tight to underside of structure as possible.
- E. If any Plumbing work has been installed before coordination with other trades so as to cause interference with the work of such trades, all necessary adjustments and corrections shall be made by the plumbing trades involved without extra cost to the Owner.
- F. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Architect for review and approval.
- G. Protect all materials and work of other trades from damage which may be caused by the Plumbing work, and repair all damages without extra cost to the Owner.

1.9 MECHANICAL AND ELECTRICAL COORDINATION

- A. Plumbing Subcontractor shall furnish and install various electrical items relating to the plumbing equipment and control apparatus. The Electrical Subcontractor shall be required to connect power wiring to this equipment unless noted otherwise.

- B. The Plumbing and Electrical Subcontractors shall coordinate their respective portions of the work, as well as the electrical characteristics of the plumbing equipment.
- C. All power wiring and local disconnect switches will be provided by the Electrical Subcontractor for the line voltage power. All control and interlocking wiring shall be the responsibility of the Plumbing Subcontractor.
- D. 120V and above power wiring sources extended and connected to heating and ventilating control panels, transformers and switches shall be the responsibility of the Electrical Subcontractor. All low voltage thermostats, zone valve and any switch wiring shall be the responsibility of the HVAC Subcontractor.
- E. Temperature control and equipment wiring shall be installed by the Plumbing Subcontractor.
- F. Pipe heat tracing shall be furnished and installed by the Plumbing Subcontractor. Power connections shall be by the Electrical Subcontractor.
- G. The Electrical Subcontractor will provide all magnetic starters except those furnished as an integral part of packaged equipment.

1.10 INSTALLATION REQUIREMENTS

- A. The arrangement of all Plumbing work shown on the Contract Drawings is diagrammatic only and indicates the minimum requirements of the work. Conditions at the building including actual measurements shall determine the details of the installation. All work shall be laid out and installed so as to require the least amount of cutting and patching.
- B. Review the Architectural Drawings and Specifications before ordering any material and equipment. Any discrepancies shall be brought to the attention of the Architect for his determination prior to proceeding with the work.

1.11 TYPICAL DETAILS

- A. Typical details where shown on the Contract Drawings shall apply to each and every item of the project where such items are applicable. They are not repeated in full on the Contract Drawings, which in many cases are diagrammatic only, but with the intention that such details shall be incorporated in full. Any alternate method proposed for use by the Contractor shall have the prior approval of the Architect.

1.12 SLEEVES, INSERTS

- A. Furnish and install all sleeves, inserts, anchor bolts and similar items to be set into masonry or concrete, as required for Plumbing work as indicated in Division 1. Internal diameter of sleeve ball shall be 1/2" larger than the outside diameter of the pipe or insulation covered line passing through it.

1.13 FIRESTOPPING, SMOKEPROOFING & WATERPROOFING

- A. All cutting, patching, firestopping and waterproofing shall be performed by the Fire Suppression Subcontractor. Refer to Sections 01 73 29 – CUTTING AND PATCHING, 07 00 01 – WATERPROOFING, DAMPPROOFING & CAULKING, and 07 84 13 PENETRATION FIRESTOPPING for project requirements.

1.14 CORING, DRILLING

- A. Core, cut and/or drill all holes in walls and floors required for the installation of sleeves and supports for the Plumbing work as indicated in Division 1.

1.15 ACCESSIBILITY

- A. Install all work such that parts requiring periodic inspection, operation, maintenance and repair are readily accessible.
- B. Furnish all access panels appropriate to particular conditions, to be installed by trades having responsibility for the construction of actual walls, floors or ceilings at required locations.

1.16 SUPPLEMENTARY SUPPORTING STEEL

- A. Provide all supplementary (non-structural) steelwork required for mounting or supporting equipment and materials.
- B. Steelwork shall be firmly connected to building construction as required. Locations and methods of attachment shall be approved by the Architect.
- C. Steelwork shall be of sufficient strength to allow only minimum deflection in conformity with Manufacturer's published requirements.
- D. All supplementary steelwork shall be installed in a neat and workmanlike manner parallel to floor, wall and ceiling construction: all turns shall be made at forty-five and ninety degrees, and/or as dictated by construction and installation conditions.
- E. All manufactured steel parts and fittings shall be galvanized.

1.17 TOOLS AND EQUIPMENT

- A. Provide all tools and equipment required for the fabrication and installation of the plumbing equipment at the site.

1.18 PORTABLE AND DETACHABLE PARTS

- A. Contractors shall retain in their possession all portable and/or detachable parts and portions of materials, devices, equipment, etc. necessary for the proper operation and maintenance of the Mechanical and Electrical systems until final completion of the work, at which time they shall be handed over to the Owner.

1.19 RECORD DRAWINGS, PROJECT CLOSEOUT

- A. As work progresses and for the duration of Contract, maintain a complete and separate set of prints of Contract Drawings at job site at all times. Record work completed and all changes from original Contract Drawings clearly and accurately including work installed as a modification or addition to the original design. Work shall be updated on a weekly basis and shall be made available for review by Architect. Failure to perform this work shall be reason for withholding requisition payments. In addition, take photographs of all concealed equipment in gypsum board ceilings, shafts, and other concealed, inaccessible work. At completion of work, make copies of photographs with written explanation on back. These shall become part of Record Documents.
- B. At the completion of work, prepare a complete set of electronic Record Drawings showing all systems as actually installed. The electronic copies will be made available for the Plumbing Contractor's copying, at his expense. The quantity of copies which are made available shall in no way be interpreted as setting a limit to the number of Drawings necessary to show the required information. The Plumbing Contractor's professional Draft Person shall transfer changes to electronic copies. Submit sets of prints to Architect for comments as indicated in Division 1 – 01 78 00 CONTRACT CLOSEOUT.
- C. The Architect will not certify the accuracy of the Record Drawings. This is the sole responsibility of the Plumbing Contractor.
- D. This trade shall submit the Record Drawings for approval by the Fire and Building Departments in a form

acceptable to the departments, when required by the jurisdiction.

- E. Record Drawings shall show record condition of details, sections, riser diagrams, control changes and corrections to schedules. Schedules shall show actual Manufacturer, Make and Model numbers of final equipment installation.

1.20 GUARANTEE/WARRANTY

A. Guarantee and 24 Hour Service:

1. Guarantee Work of this Section in writing for not less than one (1) year following the date of acceptance by the Owner. If the equipment is used for temporary power etc, prior to acceptance by the Owner, the bid price shall include an extended period of warranty covering the one (1) year of occupancy, starting from the date of acceptance by the Owner. The guarantee shall repair or replace defective materials, equipment, workmanship and installation that develop within this period, promptly and to the Architect's satisfaction and correct damage caused in making necessary repairs and replacements under guarantee within Contract Price.
2. In addition to guarantee requirements of Division 1 and of Subparagraph A above, obtain written equipment and material warranties offered in Manufacturer's published data without exclusion or limitation, in Owner's name.
3. Upon receipt of notice from the Owner of failure of any part of the systems or equipment during the warranty period, the affected part or parts shall be replaced by this Contractor without any reimbursement.
4. Replace material and equipment that require excessive service during guarantee period as defined and as directed by Architect.
5. Provide 24 hour service beginning on the date the project is accepted by the Owner, whether or not fully occupied, and lasting until the termination of the guarantee period. Service shall be at no cost to the Owner. Service can be provided by this Contractor or a separate service organization. Choice of service organization shall be subject to Architect and Owner approval. Submit name and a phone number that will be answered on a 24 hour basis each day of the week, for the duration of the service.
6. Submit copies of equipment and material warranties to Architect before final payment.
7. At end of guarantee period, transfer Manufacturer's equipment and material warranties still in force to Owner.
8. This paragraph shall not be interpreted to limit Owner's rights under applicable Codes and Laws and under this Contract.
9. PART 2 paragraphs of this Specification may specify warranty requirements that exceed those of this paragraph. Those paragraphs shall govern.
10. Use of systems provided under this Section for temporary services and facilities shall not constitute Final Acceptance of Work by Owner, and shall not initiate the guarantee period.
11. Provide Manufacturer's Engineering and Technical Staff at site to analyze and rectify problems that develop during guarantee period immediately. If problems cannot be rectified immediately to Owner's satisfaction, advise the Architect in writing, describe efforts to rectify situation, and provide analysis of cause of problem. The Architect and/or Engineer will direct course of action.

1.21 OPERATING, INSTRUCTION AND MAINTENANCE MANUALS

- A. Refer to Section 01 78 00 – CONTRACT CLOSEOUT and 01 78 00 – OPERATION AND

MAINTENANCE DATA for submittal procedures pertaining to operating and maintenance manuals.

- B. Each copy of the approved operating and maintenance manual shall contain copies of the approved Shop Drawings, equipment literature, cuts, bulletins, details, equipment and engineering data sheets and typewritten instructions relative to the care and maintenance for the operation of the equipment, all properly indexed. Each manual shall have the following minimum contents:
1. Table of Contents.
 2. Introduction:
 - a. Explanation of manual and its purpose and use.
 - b. Description of the plumbing systems.
 - c. Safety precautions necessary for equipment.
 - d. Illustrations, schematics and diagrams.
 - e. Installation drawing.
 3. Maintenance:
 - a. Maintenance and lubricating instructions.
 - b. Replacement charts.
 - c. Trouble-shooting charts for equipment components.
 - d. Testing instructions for each typical component.
 - e. Two (2) typed sets of instructions for ordering spare parts. Each set shall include name, price, telephone number and address of where they may be obtained.
 4. Manufacturer's Literature:
 - a. The equipment for which Shop Drawings have been submitted and approved.

1.22 QUALITY ASSURANCE

- A. The requirements of the State Building Code and Local regulations establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified herein.
- B. All work shall comply with the latest editions of the Codes as referenced herein.
- C. Follow Manufacturer's directions for articles furnished, in addition to directions shown on the Contract Drawings or specified herein.
- D. Protect all work, materials, and equipment from damage during process of work. Replace all damaged or defective work, materials and equipment without additional cost to the Owner.
- E. All equipment and materials for permanent installation shall be the products of recognized Manufacturers and shall be new.
- F. Equipment and materials shall:
 1. Where normally subject to Underwriters Laboratory Inc. listing or labeling services, be so listed and labeled.
 2. Be without blemish or defect.
 3. Not be used for temporary purposes.

- 4. Be in accordance with the latest applicable ASME standards.
- G. Products shall meet with the acceptance of all Authorities Having Jurisdiction over the work. Where such acceptance is contingent upon having the products examined, tested and certified by Underwriters or other recognized testing laboratory, the product shall be so examined, tested and certified.
- H. All items of equipment or material of one (1) generic type shall be the product of one (1) Manufacturer throughout.
- I. For items which are to be installed but not purchased as part of the Electrical work, the Electrical work shall include:
 - 1. The coordination of their delivery.
 - 2. Their unloading from delivery trucks driven into any point on the property line at grade level.
 - 3. Their safe handling and field storage until the time of permanent placement in the project.
 - 4. The correction of any damage, defacement or corrosion to which they may have been subjected. Replacement, if necessary, shall be coordinated with the Contractor who originally purchased the item.
 - 5. Field erection and internal wiring as necessary for their proper operation.
 - 6. Mounting in place, including the purchase and installation of all dunnage, supporting members, and fastenings, necessary to adapt them to architectural and structural conditions.
 - 7. Their connection to building wiring including the purchase and installation of all termination junction boxes necessary to adapt and connect them to this wiring. Included also shall be the purchase and installation of any substitute lugs or other wiring terminations as may be necessary to adapt their terminals to the building wiring as called for and to the connection methods set forth in these Specifications.
- J. Items which are to be installed but not purchased as part of the Plumbing work shall be carefully examined upon delivery to the project. Claims that any of these items have been received in such condition that their installation will require procedures beyond the reasonable scope of the Plumbing work will be considered only if presented in writing within one (1) week of the date of delivery to the project of the items in question. The Plumbing work includes all procedures, regardless of how extensive, necessary to put into satisfactory operation, all items for which no claims have been submitted as outlined above.

1.23 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the products' and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage shall not be used and shall be removed from the site.

PART 2 PRODUCTS

2.1 PIPE MATERIALS

- A. The table below indicates pipe class for each service. Refer to the following pages for expanded Specifications for the respective class.

PIPE MATERIALS SPEC INDEX

Service	Code	Maximum Operating (psig)	Service Limits (Temperature °F)	Pipe Material
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Domestic Cold Water	CW	150 below grade	250	Copper
Domestic Hot Return	HWR	150 below grade	250	Copper
Domestic Hot Water	HW	150 below grade	250	Copper
Sanitary Waste & Vent	S	Gravity	120	PVC

- B. Each valve type shall be the product of a single Manufacturer. Each system shall be provided with valves as required by Code and shown on the Contract Drawings and shall be installed to facilitate operation, replacement and repair.
- C. Provide access panels for concealed valves behind non-removable ceilings or walls.
- D. Provide shut-off valves on supply piping to individual pieces of equipment.
- E. Provide pipe dope, Teflon tape, wax rings, neoprene gaskets and other jointing compounds as required by best standard practice and only on service as recommended by Manufacturer.
- F. Apply putties and jointing compounds for plumbing fixtures and trim as recommended by Manufacturers.
- G. Valves on insulated piping system shall be equipped with extended handles to accommodate insulation thickness.

2.2 COPPER PIPE (FOR CW, HWR, HW SYSTEMS)

	1/2" to 3"	4" and Larger
Pipe	Seamless copper water tube, drawn temper, Type L. ASTM B-88. See Note 1.	Seamless copper water tube, drawn temper, Type L. ASTM B-8. See Notes 2 & 5.
Fittings	Wrought copper, solder-joint. ASTM B-16.22.	Ductile iron coupling with copper alkyd enamel paint coating, ASTM A-536. Grade "E" EPDM elastomer gasket. ASTM D-2000. Equal to Victaulic Style 606 coupling. ASTM B-75 copper alloy fittings. ASTM B-584 grooved end cast bronze fittings for 6" pipe size.
Joints	ASTM B-32 solder filled material, Alloy Sb5 "95/5." ASTM B-813 liquid or paste flux. Soldering procedures shall comply with ASTM B-828.	Rolled groove prepared and assembled in accordance with Manufacturer's instructions.
Mechanical Joints	Cast copper alloy unions, hexagonal stock with ball-and-	ANSI Class 150 flange adapter equal to Victaulic Style 641 for connections to flanged

	socket joint, solder joint ends. ASME B-6.18.	equipment. ANSI B-16.1 flange dimensions. Watts G-4000-FDA series.
Valves Gate	Use ball valve.	Use ball valve.
Ball	All bronze, 3 piece, full port, PTFE seats, solder end connections. 600 psig WOG. Apollo 82-200, Milwaukee BA-350, Watts B-6801.	Class 125, cast iron body, epoxy coated. Full port, flanged ends, stainless steel ball and stem. ANSI B16.1 flange dimensions. Watts G-4000 FDA series.
Check	Bronze body and clapper, solder ends, 200 WOG. Jenkins 4093, WOG. Milwaukee 1509, Stockham B-309.	Iron body, bronze mounted, flanged ends, 200 Jenkins 625-C, Milwaukee F-2974-M, Stockham G-931.
Balancing	All bronze, 2 piece, RPTFE seats, solder end connections. 600 psig WOG. Apollo 70-100, Milwaukee BA-150, Watts B-6001. CamLock handle.	Cast iron lug body butterfly valve. Bronze disc, replaceable EPT liner and stainless steel stem, 200 psig CWP.

A. Notes:

1. Below grade water piping 3” and smaller be Type K copper with bituminous coating copper brazed joints, BcuP filler alloy. ANSI/AWS A5.8 procedures shall be per ANSI/AWS B2.2.
2. Contact between dissimilar metals shall be made with dielectric couplings or dielectric flanges. Contact between ferrous and stud bolts and bronze flanges shall be electrically insulated with non-metallic washers.
3. Provide mechanical joint connections to all equipment such as water heaters, pumps, compressors, etc.

2.3 SANITARY WASTE AND VENT

	Above Grade	Below Grade
Piping	Schedule 40 solid core PVC DWV piping conforming to ASTM D2665 & NSF-14, with ends for solvent cemented joints.	Schedule 40 solid core PVC DWV piping conforming to ASTM D2321 & NSF-14, with ends for solvent cemented joints.
Fittings	PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns.	PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns.
Joints	Solvent Cement: ASTM D 2564. PVC solvent cement shall have a VOC content of 510 g/L	Solvent Cement: ASTM D 2564. PVC solvent cement shall have a VOC content of 510 g/L

	<p>or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).</p> <p>Primer: ASTM F 656. Primer shall have a VOC content of 550g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).</p>	<p>or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).</p> <p>Primer: ASTM F 656. Primer shall have a VOC content of 550g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).</p>
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A. Notes:

1. Copper tube and fittings shall not be used on urinal wastes.
2. Cellular (foam) core PVC piping is not approved for installation and shall not be installed.

2.4 INSULATION

- A. Insulation shall be by Owens-Corning, Certain-Teed or Manville.
- B. Insulation shall be installed by insulation firm regularly specializing in this work and employing men particularly skilled therein. No covering applied by plumber's "helpers" will be acceptable.
- C. Insulation installation shall meet Manufacturer's recommendations. No insulation shall be applied until piping has passed tests as required by Authorities Having Jurisdiction.
- D. Insulation, jackets and adhesives shall be flame-retardant and shall have ASTM E-84 fire hazard ratings of 25 flame spread, 50 smoke developed and 50 fuel contributed.

1. Interior Applications – Jackets:

- a. Type a – Vapor Barrier Jackets: Kraft reinforced foil vapor barrier with self-sealing adhesive joints. Jacket shall be heavy duty fire retardant material with glass fiber reinforcing and self-sealing lap. Jacket will be factory applied to the insulation. Jacket shall have neat, white Kraft finish or white vinyl suitable for painting, with bead puncture resistance of 50 units minimum. Vapor barrier shall be .001" aluminum foil adhered to the inner surface of the jacket. Permeance shall not exceed 0.02 perms. Jacket shall be Owens-Corning Fiberglass "ASJ-SSL" or Manville FlameSafe "AP-T".
- b. Type b – PVC Jackets: One piece, pre-molded type.

E. Insulation and jacketing shall be in accordance with following:

1. Type A: Glass fiber insulation; ANSI/ASTM C547; "k" value of 0.22 – 0.28 at 100° F non-combustible.
2. Type B: Molded, flexible closed cell vinyl, ASTM D635; "k" value of 1.17 bacterial resistant.

F. Schedule: The following piping systems require insulation:

Piping System	Type	Insulation Thickness Inch (mm)	Jacket Type
Domestic Hot Water Supply/Return Less Than 1-1/2"	A	1"	a, b

Domestic Hot Water Supply/Return 1-1/2" and Larger	A	1-1/2"	a, b
Domestic Cold Water	A	1"	a, b
Handicap Lav. Hot Water and Waste	B	1/8"	b

1. Notes:

- a. Two (2) layers of 1" with staggered joints. Provide galvanized 1/2" steel bands, 12" on center, apply 1' hexagonal mesh over insulation and 1/2" thick coat of insulating cement troweled smooth. Apply glass cloth jacket and size with one brush coat of lagging adhesive.
 - b. Insulation shall include drain sump body and all horizontal piping to and including the elbow down to vertical.
 - c. Unless noted otherwise, Section "F" pertains to all piping specified system. This note pertains to all piping scheduled above.
- G. Insulation of exterior piping and fittings shall be covered with 0.016" thick smooth aluminum jacket with longitudinal zee closures. Jacket shall be secured at both joints with 2" wide aluminum straps centered over butt joint of jacket. Provide 1/2" wide aluminum bands on 12" centers. Fitting covers shall be manufactured for purpose intended and shall be of same material.
- H. Pipe hangers shall be outside insulation and shall incorporate 12", 26 gauge protection shields. Insulation on piping that passes through walls or partitions shall pass continuously through sleeves, except at firewalls, smoke partitions and floor penetrations where space between sleeves and piping shall be fire stopped with approved packing.

2.5 PIPE SUPPORTS

- A. Provide adjustable clevis hangers for hanger sizes 4" and larger and cast brass split-ring hinged hangers or band type hangers for smaller. Support piping from building structure to maintain required grade and pitch of pipe lines, prevent vibration, secure piping in place and provide for expansion and contraction. Hangers on all insulated pipe shall be clevis type.
- B. Provide vertical brackets and guides for horizontal piping where it is racked along walls. Trapeze hangers may be used where conditions permit. Provide all necessary pipe clips, anchors and sundries for proper alignment and support of piping. Hangers for copper piping shall be coated for dielectric isolation. Hangers for PVC, polypropylene and other plastic piping shall be extended V-shaped, with angle iron pipe supports as necessary.
- C. Hangers for gas piping shall be steel hangers with cast rollers or pipe and roller supports.
- D. Hanger rods shall have machine threads. Beam clamps, concrete inserts and expansion shields shall be provided as required. No ramset or shot shields will be allowed.
- E. Hanger spacing shall meet requirements of State and Local Plumbing Codes. In no case shall horizontal piping be supported at intervals greater than 10'-0".
- F. Piping below basement or lowest level slab (that is, buried piping), need not be supported from structure if slab is not designed as structural slab. The Plumbing Contractor shall support all piping under structural slabs on grade.
- G. Pipe supports shall not bear on sleeves.
- H. Friction clamps shall be installed at base of plumbing risers and at each floor. Friction clamps shall not be

supported from or rest on sleeves.

- I. Horizontal piping shall be suspended from building structure by mild steel rod connecting pipe hanger to inserts, beam clamps, angle brackets and lag screws as required by Building Construction in accordance with the following:

Rod Size	Pipe Size
3/8"	1/2" to 2"
1/2"	2-1/2" to 4"
5/8"	5" to 12"
3/4"	15"

- J. Hangers on insulated lines shall be sized to fit the outside diameter of pipe insulation. Provide hangers for insulated piping with 12" long, 18 gauge galvanized insulation shields.
- K. Piping at equipment and control valves shall be supported to prevent strains or distortions in connected equipment and control valves. Piping at equipment shall be supported to allow for removal of equipment, valves and accessories with a minimum of dismantling and without requiring additional support after these items are removed.
- L. Piping installed under this Section shall be independently supported from building structure by means of beam attachments and not from piping, ductwork or conduit of other trades. Supplementary steel, including factory-fabricated channels, required to meet the requirements specified herein, shall be provided by the Plumbing Contractor.
- M. Maximum spacing of hangers on runs of steel, copper or brass pipe shall be as follows:

Schedule: Hanger Spacing in Feet/Pipe Material		
Pipe Size (Inches)	Steel (Feet)	Copper or Brass (Feet)
1/2 to 1	7	5
1 to 1/4	10	6
1 to 1/2	10	8
2 to 8	10	10

- N. Maximum spacing of hangers on no hub cast iron soil pipe shall be 4' and hangers shall be provided at all changes in direction. Hanger rods to support piping from the structure or supplementary steel shall not exceed 4' in total length. Where pipe support assemblies exceed 4' in total length, Plumbing Contractor shall provide factory-fabricated channels and associated accessories.
- O. All thermoplastic piping systems shall be hung in strict accordance with Manufacturer's recommendations.

2.6 SLEEVES, INSERTS, FIRE STOPPING AND ESCUTCHEONS

- A. All pipes passing through floors, walls or partitions shall be provided with sleeves having an internal

diameter one inch larger than the outside diameter of pipe. Pipe Sleeve Materials:

1. Sleeves through floors and through exterior, structural and fire-rated construction, shall be hot dipped galvanized Schedule 40 steel pipe. Sleeves shall extend 1" above finished floor.
 2. Sleeves through partitions and non-fire-rated construction shall be 26 gauge galvanized steel with lock longitudinal seams or approved plastic pipe.
 3. Provide waterproofing membrane locking devices at floors. Provide 150 lb. Slip-on welding flanges at exterior wall penetrations.
 4. Provide one-piece chrome plates escutcheons on all wall, floor and ceiling pipe penetrations in finished rooms and areas.
- B. Fire stop penetration seals in fire-rated construction shall be products of STI SpecSeal, 3M, Proset Systems Firefill or Dow and shall be installed in accordance with the latest requirements of ASTM E814 (UL 1479). Fire stop penetration sealants for non-metallic and insulated piping shall be intumescent (STI SpecSeal Series 100 Sealant or SpecSeal Collar or approved equal). Provide mineral fiberboard, matting or putty for damming and forming. Finish seals flush to wall surface and fill gaps with silicone adhesive sealant caulking (Dow 96-081 RTV or approved equal). Provide 1" thick ceramic fiberboard on both sides of penetrations in 2 and 3 hour rated walls and floors less than 8" thick.
- C. Packing for sleeves that do not require maintenance of fire rating shall be oakum, silicate foam, ceramic fiber or mineral fiber with approved sealant. Pack or foam to within one inch of both wall surfaces. Seal penetration packing with approved caulking and paintable waterproof mastic surface finish or silicone caulking.
- D. Waterproof Pipe Penetrations:
1. Sleeves through outside walls shall be provided with pipe to wall penetration closures equal to Link-Seal Thunderline Corporation. Seals shall be mechanical type of interlocking rubber links shaped to fill space between pipe and sleeve. Links shall be assembled with bolts to form a belt around the pipe with pressure plate under each bolt head and nut. After seal assembly is positioned, tightening of bolts will provide watertight seal. This Contractor shall determine the required inside diameter of each individual sleeve before ordering, fabricating or installing. The inside diameter of each sleeve shall be sized as recommended by the Manufacturer to fit the pipe and Link-Seal to assure a watertight joint.
 2. Prefabricated modular sleeves shall be Mason Industries (SWS) or approved equal stiffened galvanized steel sleeves with preformed closed-cell elastomeric seal (non-fire rated) or preformed mineral fiber or silicone foam seal (fire rated).
 3. Provide waterproof 1" single ring set in silicone and bolted to floor or wall at chipped and drilled penetrations of existing slabs on grade and existing walls below grade.
- E. Inserts shall be individual or strip type or pressed steel construction with accommodation for removable nuts and threaded rods up to 3/4" diameter, permitting lateral adjustment. Individual inserts shall have an opening at the top to allow reinforcing rods up to 1/2" diameter to be passed through the insert body. Strip inserts shall have attached rods with hooked ends to allow fastening to reinforcing rods.
- F. Unless otherwise specified herein, escutcheons shall be cast brass chrome plated type and provided with a set screw to properly hold escutcheon in place.

2.7 CLEANOUTS, TRAPS AND STRAINERS

- A. Provide cleanouts in soil, waste and storm drainage piping on straight runs at changes in directions and at foot of stacks and other points where required by inspecting Authorities. Cleanouts shall suit construction

in which they are to be installed.

- B. Maximum horizontal distance on straight runs between cleanouts in piping 4" and smaller shall be 50 feet.
- C. Cleanouts shall be same size as pipe 4" and smaller. Cleanouts for piping larger than 4" shall be sized per local Code and in no circumstance shall they be less than 4" in diameter. No reduction in cleanout sizes for pipe 4" and smaller is permitted.
- D. Traps not integral with fixtures and in accessible locations shall have brass trap screw protected by water seal and will be regarded as cleanout.
- E. Bodies of cleanout ferrules in bell and spigot piping shall be standard pipe sizes conforming in thickness to that required for pipe and fittings and shall extend not less than 3/4" above hub of pipe.
 - 1. Cleanout plug shall be cast brass with raised nut 3/4" high.
 - 2. Cleanouts in copper waste piping shall be soldered brass cleanout fittings with extra heavy brass screw plugs of same size as line.
 - 3. Cleanouts in threaded waste piping shall be cast iron, drainage T pattern, 90 branch fitting with extra heavy brass screw plugs of same size as pipe.
 - 4. Floor cleanouts in finished areas shall be per schedules equivalent to J.R. Smith, Wade or Zurn.
 - 5. Floor cleanouts in unfinished areas shall be per schedules equivalent to J.R. Smith, Wade or Zurn.
- F. Provide test tees with cleanout plugs at foot vertical soil, waste, acid waste and roof conductor lines and at each floor. Cleanouts on vertical lines concealed behind finished walls shall extend to back of finish wall; provide wall plate. Obtain Architect's approval for wall plate locations and reroute piping if necessary.
- G. Cleanouts shall open in direction of flow of drainage line served or at right angles thereto.
- H. Keep cleanout plugs clean and unimpeded. Prevent covering with cement, plaster or other permanent finished materials.
- I. All cleanouts shall be installed flush to wall and/or floor. Cut and patch walls and/or floor as required for proper installation.

2.8 WATER HAMMER ARRESTERS

- A. Provide water hammer arresters at fixtures with automatic solenoid or cylinder operated valves, automatic flush valves quick-closing valves or solenoid valves and where indicated on Contract Drawings.
- B. Fixtures and equipment in battery installation may use single water hammer arrester properly sized for connected load.
- C. Provide proper access to water hammer arresters in chases, utilizing a minimum 12" x 12" access panel furnished by this Contractor.
- D. Water hammer arresters shall be installed in accordance with Manufacturer's recommendations and not less than one (1) installed per core piping hot system and core piping cold system. Arresters shall be equal to J.R. Smith, Zurn or PPP.

2.9 PLUMBING FIXTURES AND TRIM

- A. Refer to Architectural and Plumbing Drawings for quantities, locations and mounting heights of fixtures provided under this Section.
- B. Fixture trim, traps, faucets, escutcheons and waste pipes exposed to view in finished spaces shall be I.P.S. brass with polished chromium plating (CP) over nickel finish.

- C. Vitreous china fixtures shall be regular selection fused and vitrified to produce homogeneous material with close grain without pores. Surfaces that contact walls, floors and other fixtures shall be set true.
- D. Enameled surfaces on cast iron fixtures shall be of suitable thickness to provide the highest commercial grade. Exterior exposed surfaces not enameled shall be treated at factory with one (1) coat of filler.
- E. Affix Manufacturer's guarantee label or trademark to fixture to indicate first quality. Acid-resisting enamel fixture shall bear Manufacturer's symbol signifying resistance to acid.
- F. Set fixtures with wall outlet flanges at proper distance from floors and walls with closet setting compound or gasket.
- G. Catalog designations and Manufacturer's names of vitreous china and enameled cast iron fixtures are specified to establish standards of quality for performance and materials. Equivalent fixtures by Kohler, American Standard or Eljer may be submitted for consideration.
- H. Vitreous china and enameled cast-iron fixtures shall be white throughout, unless specified otherwise. Closet seats shall match closet fixture color.
- I. Fixture Types: As listed on Contract Drawings.
 - 1. Notes:
 - a. Standards:
 - 1) Floor Drains:
 - a) Cast Iron – ASME A112.21.1M
 - b) Plastic – ASTM A112.21.M
 - 2) Cleanouts: Cast Iron – ASME A112.36.2M
 - 3) Sleeve Systems: UL 1479

2.10 EQUIPMENT – GENERAL

- A. The following mechanical equipment is to be supplied by a single Manufacturer as part of this package unless otherwise noted.
- B. Equipment Tags:
 - 1. All equipment shall be tagged using black phenol background with a 1/4" white engraved lettering tag affixed to the piece. Tag shall be minimum of 2" high and 4" long for large equipment and shall include the tag number and the piece.
 - 2. Equipment Tag Sequence (Example):
 - a. G-CMP – 1XXX where:
 - b. G – Indicates system (Natural Gas)
 - c. CMP – Indicates equipment (Booster Pump)
 - d. 1 – Indicates piece number (1, 2, 3...)
 - e. XXX – Indicates building number (if applicable)
- C. All equipment furnished in the following pages shall be furnished with seismic anchoring points. Equipment supplied shall be constructed with a seismic rating.

PART 3 EXECUTION

3.1 DEMOLITION

- A. Disconnect and dismantle existing plumbing systems and equipment to be demolished and leave debris and disconnected equipment on floor for removal under Section 02 41 19 – SELECTIVE DEMOLITION.
- B. Remove existing plumbing stacks, mains and branches when serving fixtures to be demolished. Remove piping back to active main and provide valve cap or plug to suit system. Obtain existing record Drawings from Owner. Maintain existing plumbing risers and stacks serving fixtures to remain.
- C. After walls and ceilings are removed and piping is exposed, verify piping serves only plumbing fixtures indicated for demolition before shut-down for disconnection. Identify existing piping which serves fixtures to remain. Promptly notify Architect of active piping to be maintained when located in partitions to be demolished.
- D. Remove existing stacks and risers located in existing partitions to be demolished and provide new off-set at ceiling and drop through floor and reconnect to existing services at the floor below.

3.2 COORDINATION

- A. Cooperate and coordinate with work of other Sections in executing work of this Section.

3.3 EXPANSION PROVISIONS

- A. Allow for expansion with offsets, loops, swing joints, expansion joints and other means, where necessary to protect piping systems as shown. Take-offs from mains to run outs shall not have less than a three (3) elbow swing.
- B. Anchor mains and risers with loops or offsets to structure to impart expansion toward loops and offsets. Anchors shall be forged wrought iron, secured to pipe and structure. Provide vibration isolation as required and as specified.
- C. Provide pipe alignment guides to guide expanding pipe to move freely from anchor points towards expansion joints, offsets and other expansion provisions.

3.4 PIPE IDENTIFICATION

- A. Provide color-coded pipe identification markers on piping installed under this section. Pipe markers shall be snap-on laminated plastic protected by clean acrylic coating. Pipe markers shall be applied after Architectural painting where such is required.
- B. Provide arrow marker with each pipe content marker to indicate direction of flow. If flow can be in either direction, use double-headed arrow marker.
- C. Main shall be labeled at points of entrance and exit from mechanical room, adjacent to each valve, on each riser, at each tee fitting, at points of entrance and exit from building, at least once in each room and at intervals no longer than 20'.
- D. In general, 2" high legend shall be used for pipe lines 4" in diameter and larger, and 3/4" high legend shall be used for pipe lines 3" in diameter and smaller.
- E. Markers shall be Seton, MIS or approved equivalent.
- F. Color banding shall meet ANSI latest and OSHA requirements.
- G. Markers shall have legends and color coding with black letters:
 - 1. Markers are to be applied to all piping, regardless of under jacket colors per the following schedule:

Service	Legend	Background Color
Cold Water	Cold Water	Green
Hot Water	Domestic Hot Water	Yellow
Hot Water Return	Domestic Hot Water Return	Yellow
Sanitary	Sanitary Sewer	Green
Vent	Vent	Yellow
Pump Discharge	Pump Discharge	Green

- H. In Penthouse, Plumbing Room, Shipping Dock, Janitor’s Closets and other areas without hung ceilings, colored PVC jackets shall be used per the schedule.
 - 1. All insulated piping exposed in mechanical rooms shall be covered with a Ceel-Co plastic jacket. Color pattern and system identification legend shall be as in the schedule.
 - 2. This plastic jacket shall include fitting covers and piping covers.
 - 3. Piping to be covered with this plastic jacket shall be insulated and finished as herein specified and then the plastic jacket shall be applied.

3.5 TAGS AND VALVES

- A. Upon completion of work, attach engraved laminated plastic tags to all valves and instrumentation. Equipment shall bear a stamped stainless tag. Tags shall have black characters on white face, consecutively numbered and prefixed with letter “P” for general valves. Tags shall bear the number used in the P&IDs for those items so marked.
- B. Embossed or engraved aluminum or brass tags may be substituted if desired. Tags shall be at least 1/8” thick.
- C. Tags shall be at least 1” diameter with numerals at least 3/8” high and attached by “S” hooks and chains.
- D. Nameplates, catalog numbers and rating identifications shall be securely attached to electrical and mechanical equipment with screws or rivets. Adhesives or cements will not be permitted.
- E. Non-potable water outlets shall be identified with permanently attached yellow color-code or 4” high triangle tag reading “Water Unsafe”.
- F. Coordinate numbering system with existing piping tags as not to duplicate numbers.

3.6 FLASHING AND COUNTER FLASHING

- A. Floor drains shall be flashed watertight with 20 ounce sheet copper flashing which shall extend 8” beyond drain flashing flange.
- B. Flashing of vents and other penetrations of roof required under this Section shall be done under other Sections.

3.7 JOINTS AND CONNECTIONS

- A. Joints and connections shall be permanent and shall be gas and water-tight. Jointing shall be types

specified for serviced indicated. Joints and connections shall meet requirements of Manufacturer's best recommended practice. All transitions between different piping materials shall be made using approved adapters. Adapters for transitions between two (2) types of piping materials shall be manufactured for purpose intended.

3.8 INTERIOR WATER SUPPLY SYSTEM

- A. Provide a complete, new (domestic and/or protected) hot and cold water piping system as indicated on Contract Drawings and as specified, including supplies to fixtures and indicated equipment. Piping shall be pitched at least 1" in 40 feet so that it can be drained completely at low points with drain valves. Piping shall be pitched up toward fixtures for proper air relief. Provide automatic air vents with outlet piped to floor and gate valve ahead of air vents, where offsets cannot be vented by means of fixture connections.
1. Pipe used in piping assembly shall be clean and shall have ends square and reamed before putting into fittings.
 2. Cut tube to required length with hacksaw or tube cutter designed for copper work.
 3. Remove burrs from inside and outside of cut edge and clean end of tube with steel wool or sand cloth until discoloration is removed and metal is smooth and bright.
 4. Oxides shall be removed by sand cloth and brush.
 5. Removal of oxides or discoloration of pipe and fittings by acids or self-cleaning flux is forbidden.
 6. Apply a thin, uniform and complete coating of reliable brand of soldering flux (Nokorode or Crest) to cleaned surfaces of tube and fittings.
 7. When joints are soldered, remove excess solder with a cloth or brush leaving a fillet of solder in chamber at end of the fitting.
 8. Where quick closing valves such as solenoid or flush valves are being used, piping shall be protected from water hammer by shock absorbers. Shock absorbers shall be installed at all batteries of fixtures that are operated by flush valves. Shock absorbers shall be as manufactured by PPP, J.R. Smith, or Zurn, and shall conform to the Plumbing and Drainage Institute (PDI) published requirements.
 9. Connections to tanks and equipment shall be made with unions.
 10. Water services supplying the building shall flow through in-line strainers and shall have containment backflow protection as indicated.
 11. Shut-off and control valves on main distribution and branch lines shall be located for easy access and operation. Branch piping shall be valved with access panels provided as required at locations shown on Contract Drawings and determined in field.

3.9 INTERIOR SANITARY WASTE AND VENT PIPING

- A. Provide waste, drainage and vent lines shown in building as shown on Contract Drawings. Vents shall extend through roof and shall increase to at least 4". Piping shall be assembled and installed without undue strains and stresses and provision shall be made for expansion, contraction and structural settlement.
- B. Interior horizontal sanitary waste and storm drainage piping shall be installed in practical alignment at uniform grade of at least 1/8" per foot, but 1/4" per foot where Code dictates and as shown on Contract Drawings.
- C. Vents from fixtures or line of fixtures, when connected to vent line serving other fixtures, shall be extended at least 6" above flood level rim of highest of fixtures to prevent use of vent line as waste. No vent terminal shall be directly beneath door, window or other ventilating opening of building, nor shall any vent

be within 12 feet horizontally of such opening.

- D. Provide sleeves for pipe that pass through walls.
- E. Provide 3" air gap on equipment and drains that discharge to floor drains.
- F. Provide an air gap in which the vertical distance through the free atmosphere between the waste pipe and the floor rim of the receptacle into which it is discharging is a minimum of 2 pipe diameters greater.
- G. Piping shall be run straight and plumb and offsets shall be made at an angle of not less than 45.
- H. Carefully lay out work in advance so pipes pass through openings and permit proper pitch to stacks. Due to extensive ventilation and lighting systems all trades shall coordinate work with work of other trades.
- I. Aboveground PVC piping shall be installed according to ASTM D2665. Underground PVC piping shall be installed according to ASTM D2321.
- J. For PVC piping, solvent cement joints shall be used for joints. All surfaces shall be cleaned and dry prior to applying the primer and solvent cement. Installation practices shall comply with ASTM F402. The joint shall conform to ASTM D2855 and ASTM D2665 appendixes.
- K. Cleanouts:
 - 1. Provide cleanouts with brass caps and screws same size as pipe up to 4 inches and not less than 4 inches for larger piping at the ends of all branches on soil and waste piping and in such other portions of the piping where run is over 50 feet. Locate floor cleanouts as indicated on Contract Drawings.
 - 2. All cleanouts shall be installed flush to wall and/or floor. Cut and patch walls and floor as required for proper installation.

3.10 FIXTURE ROUGHINGS

- A. Install rough plumbing including fixture carriers and supports, valves and water hammer arresters within chase tolerances. Supply roughing through finish walls and at hose bibbs and shower heads shall be secure and free of movement. Locate valves and water hammer arresters within 12 inches of approved access panel location.
- B. Align exposed waste and supply pipe roughings with fixture connections within 1 inch tolerance. Provide flush valves in alignment with the fixture, without vertical or horizontal offsets. Obtain Fixture Manufacturer roughing data sheets for recommended roughing dimensions.
- C. Provide fixture templates for Casework Contractor for counter mounted sinks and lavatories.
 - 1. Rough handicapped use water closets to locate the flush valve handle on the wide side of the toilet stall.
- D. Secure fixture supports to floor slab construction with lag bolts and metal expansion shields to support at least 250 pounds on the front rim of the fixture for 5 minutes.
- E. Mounting heights shall be in accordance with all local and State Codes and latest ADA Standards.
- F. Provide fixture rough-in piping connections, sizes in accordance with schedule on Contract Drawings.

3.11 EQUIPMENT ROUGHINGS AND CONNECTIONS

- A. Provide roughing and final connections for water, waste, air and gas systems including indirect wastes, traps, tailpieces, stops and supplies, valves and unions for all equipment and fixtures including those supplied under other sections.
- B. Provide complete plumbing roughings with capped and valved service with union of flange to suit Owner furnished equipment.

- C. Refer to Architectural floor plans and Equipment schedules for all equipment provided under other sections or by Owner. Roughing for all equipment including floor drain locations shall be based on approved Shop Drawings. Install indirect waste discharge to spill into floor drain funnel. Floor drain grate and sediment bucket shall be removable.

3.12 INSTALLATION OF SPECIALTY ITEMS

- A. Install vacuum relief valves located above the top of the heater on cold water supply lines to water heaters.
- B. Gauges: Install gauges where indicated on the Contract Drawings and as specified. Install pressure gauges at water service entrance on inlet and outlet sides of strainers, filters, backflow preventers and pumps. Install temperature gauges on inlet and outlet side of water heaters and on recirculation line at least 10 feet upstream of circulation pumps. Gauges shall be legible from 4 feet to 6 feet above the floor.
- C. Trap Primers: Install trap primer and related piping through the floor and connect to primer connection on floor drains in all areas where maintaining the trap seal could be a problem. Trap seal gaskets may be installed if acceptable by Code and Local Authority Having Jurisdiction.
- D. Water Hammer Arresters: Provide water hammer protection at all self-closing fixtures and equipment. Equip quick-closing valves such as flush valves and solenoids with water hammer arresters. Banks of plumbing fixtures may be protected with a single properly sized and located PDI certified arrester. Obtain approval for access panel location prior to installation.

3.13 INSTALLATION OF FIXTURES

- A. Mount fixtures level at the elevations shown on Architectural Drawings. Refer to toilet room elevations and casework details.
- B. Install handicapped use fixtures in accordance with the requirements to the Architectural Access Board Code, latest ADA standards and ANSI A117.1. Insulate hot water supply and waste piping under lavatories.
 - 1. Where urinals are provided, install one urinal with the rim mounted 17 inches above the finish floor in compliance with the Handicapped Code.
- C. Grout walls and floor mounted fixtures watertight where the fixtures are in contact with walls and floors.
- D. Caulk deck-mounted trim at the time of assembly, including fixture and casework mounted. Caulk self-rimming sinks installed in casework.

3.14 CLEANING

- A. Clean systems thoroughly before testing. Fixtures, equipment, pipe, valves and fittings shall be free of grease, metal cuttings, dirt and other foreign material. Remove protective covers. Fixtures (including lavatories, water closets and urinals) shall be cleaned and ready for use.
- B. Repair stoppage, discoloration and damage to parts of building, finish and furnishings due to failure to properly clean piping system within Contract Price.
- C. After completion of project, clean the exterior surface of equipment included in this section, including concrete residue.
- D. After the completion of the work, all materials and equipment surfaces shall be thoroughly cleaned and polished in accordance with the finish of the material. All chromed surfaces shall be highly polished.
- E. Before the systems are tested and balanced, pipes and equipment shall be thoroughly cleaned so that no dirt, dust, or other foreign matter will be deposited in or carried through the systems.

- F. Water Systems shall be thoroughly flushed and cleansed of any and all deleterious materials at least once before system is placed in operation. At this time, these systems will be carefully checked for leaking and defects as hereinafter specified. An approved cleansing agent will be used in flushing.
- G. At all times, keep the premises clear of undue accumulation of rubbish.
- H. On completion of the work, remove all rubbish and debris resulting from this Contract and dispose of same. At any time should the General Contractor be dissatisfied with the performance of clean-up responsibilities, he may elect, after proper notification, to undertake this operation and back charge this Subcontractor accordingly.
- I. All equipment shall be thoroughly cleaned and left in a satisfactory condition for proper operation at project completion.
- J. Before placing orders for pre-cleaned pipe, fittings, valves, etc., the Contractor shall submit the Manufacturer's Cleaning Specifications to the Engineer for approval.
- K. The supplying of pre-cleaned materials or the Engineer's approval of the Manufacturer's Cleaning Specifications, does not relieve the Contractor of the responsibility for meeting the requirements for cleanliness outline in this specification.

3.15 DISINFECTION OF WATER SYSTEMS - INTERIOR

- A. Water piping systems shall be thoroughly disinfected with a solution containing no less than 50 parts per million of available chlorine. Chlorinating materials shall be either liquid chlorine or sodium hypochlorite solution, and shall be introduced into the system and drawn to all points in the system. Disinfection solution shall be allowed to remain in system for 24 hours. During this time, valves and faucets shall be opened and closed several times. After disinfection, solution shall be flushed from the system with clear water until residual chlorine content is no greater than 0.2 parts per million.
 - 1. Notify all parties 48 hours prior to cleaning system.
 - 2. Bypass all building filters.
 - 3. Perform chlorination prior to heating the domestic hot water system. Run circulation pumps on the domestic HW system.
 - 4. Provide advance notice to all trades prior to procedure. Post warning signs throughout the job site.
 - 5. Collect samples randomly and at end user points.
- B. Work shall be supervised by Owner and performed by approved chemical testing laboratory and results sent to the Architect or Architect's Representative for verification.

3.16 TESTING AND ADJUSTING – GENERAL

- A. Scope:
 - 1. Test and adjust plumbing systems as specified and as required by Code and Contract Documents.
 - 2. Testing, balancing and adjusting shall in no way relieve guarantee requirements.
 - 3. Provide services of qualified personnel, equipment and apparatus required to perform tests.
 - 4. All systems shall be thoroughly adjusted for perfect intended operation. All mechanical equipment shall be adjusted for flow, temperature, etc. of fluid. The entire hot water circulation system shall be thoroughly balanced so hot water draw from fixtures shall be as quickly available as possible. Pumps, relief valves and pressure reducing valves shall be adjusted as required. Submit in writing to the Engineer upon completion of this work that it is complete and ready for use.

- B. Before date of acceptance, furnish Architect with Certificates of Testing and Inspection indicating approval of Authorities Having Jurisdiction and conformance with requirements of Contract Documents.
- C. General:
1. Submit proposed test procedures, recording forms and test equipment for review before testing.
 2. Notify Architect and Authorities involved at least 48 hours before testing and inspection.
 3. Do not paint, cover or conceal work before testing, inspecting and obtaining approval; this includes backfilling and application of insulation.
 4. Costs of repairs and restoration of work of other trades and of existing building surfaces or material damaged during cleaning or testing shall be borne by trade performing cleaning or testing.
- D. No tests shall be started until systems have been cleaned as described under "Cleaning" paragraph. Provide temporary piping and connections for testing, flushing or draining systems to be tested.
1. Repair or replace leaks, damage and defects that result from tests to like-new condition. Remove and replace defective materials with acceptable materials.
 2. Piping and joints shall be made tight without caulking. Continue tests until systems operate without adjustments and repair to equipment or piping.
 3. Provide testing instruments, force pumps, gauges, equipment and labor necessary to conduct tests. Instruments used for testing and balancing shall have been calibrated within six months before balancing. Instrument calibration shall be certified.'
 4. Submit six (6) copies of complete testing and balancing report to Architect for review.
- E. Final test shall be made after vertical and horizontal pipes and roughing-in have been run and before sewer or fixture connection is made.
1. After soil, waste and storm lines, etc. have been installed outlets shall be temporarily plugged up.
 2. Fill pipes with water to top of vertical lines and allow them to remain so filled for 24 hours.
 3. Retesting after leaks are repaired shall be at no additional cost.
- F. Pressurized Piping Systems:
1. Leak tests shall be conducted in accordance with ANSI applicable Codes and as specified herein.
 2. Before piping of various systems has been covered or furred-in, piping systems shall be tested tight for 1 hour under hydrostatic pressure, 1-1/2 times systems working pressures, but not greater than test pressure of 150 psig.
 3. Tests shall be witnessed by Architect and pronounced satisfactory before pressure is removed or any water drained off.
 4. Equipment shall be valved off or removed during test if equipment pressure rating is less than test pressure.
 5. Retest systems after leaks are repaired within Contract Price.
- G. Gravity Systems: Test under water pressure at heads specified in Plumbing Codes. Fill pipe lines with water to top of 5 foot vertical section of pipe or to level of top of vent pipe; maintain head pressure for 30 minutes.
- H. Potable Water System Test:
1. Certification of the potable water system integrity shall be required where separate systems of potable

and non-potable water are provided to supply plumbing fixtures.

2. Fill potable water system to capacity with clean clear water. Introduce water at top of piping system (Hot and Cold). During filling, introduce green food coloring dye into piping system. A floor-by-floor survey shall be conducted. Operate each outlet (Hot and Cold) connected to potable water system until coloring has been observed. A method of maintaining the level of water and coloring shall be employed in order to make up the drawn off amounts. A survey sheet shall indicate each floor and the room number sequentially.
 3. This survey is required to be performed after all pressure testing and flushing of the piping system, but before sterilization. Further, it is required that all fixtures connected to the potable water system be installed prior to the test.
- I. Prove capacity and performance of each piece of equipment by field tests as specified herein various paragraphs. Equipment and instruments required for tests, as well as additional thermowells or gauge connections shall be installed at no additional cost to Owner.
1. Qualified Representative of Equipment Manufacturer shall be present. Architect may witness tests, if he so desires.

3.17 TESTING: PIPING SYSTEMS

A. General:

1. Piping systems shall be subjected to testing water or air as noted and shall hold tight at the pressure head stated for the time interval required without adding air or water. While any system is being tested, required head or pressure shall be maintained until joints are inspected.
2. Tests shall be witnessed by inspector having jurisdiction, and the Architect within 48 hour notice, given these Authorities.
3. Equipment, material, and labor required for testing of various systems, or part thereof, shall be provided by Plumbing Contractor.

B. Sanitary and Waste System:

1. Water test shall be applied to drainage system either in their entirety or in sections as required, after rough piping has been installed.
2. If applied to entire system, openings in piping system shall be tightly closed, except the highest opening and system filled with water to point of overflow.
3. If system is tested in sections, each opening shall be tightly closed except highest opening in the section under test and each section shall be filled with water but no section shall be tested with less than a 10' head of water.
4. In testing successive sections, at least upper 10' of next preceding section shall be tested so that no joint of piping in building, except the uppermost 10' of the system shall be submitted to a test of less than a 10' head of water.
5. Water shall be kept in system for at least 15 minutes before inspection starts; the system shall then be made tight at all points.

- C. Points of drainage systems tested with air instead of water shall be tested by attaching an air compressor testing apparatus to suitable opening and, after closing all other inlets or outlets, forcing air into systems until a uniform gauge pressure of 5 psi or sufficient pressure to balance a column of mercury 10" high. Pressure shall be held without introduction of additional air for a period of at least 15 minutes.

- D. All new and existing sanitary, waste and vent piping installed under the floor slab, in the area of work, shall be video camera scoped and recorded upon completion and prior to final acceptance. Any debris found in underground piping shall be flushed and removed as part of this Contract. All video recordings and results shall be submitted to the Owner as part of the closeout documents.
- E. Interior Water Piping System: Upon completion of water supply systems or section thereof, as required, system shall be tested and proved tight under a water pressure of 150 psi. Gauge shall be located on lowest new floor and pressure shall hold for a period of one (1) hours without introducing additional water. Water used for testing shall be from a potable source of supply.
- F. Testing Summary:
1. W&V – with water to a 10 foot head for 30 minutes.
 2. Water – with potable water to 150 psi for one hour.
- G. Defective Work: If inspection or tests show defects, such defective work or material shall be replaced and inspection and tests shall be repeated. Repairs to piping shall be made with new material. No caulking or screwed joints or holes shall be acceptable.
- H. Additional Tests:
1. Provide additional tests such as smoke pressure tests as required by regulations or as directed by Authorities making the inspection.
 2. Provide for any repeated test as directed by the Architect, to make all systems tight as required.
 3. Visual inspections of joints and valves shall be made as directed by the Architect.

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SECTION 26 00 00
ELECTRICAL

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS AND REFERENCES

- A. Include “General Requirements” and applicable parts of Division 1 as part of this section.
- B. Examine all other sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this section. Where paragraphs of this section conflict with similar paragraphs of Division 1, requirements of this section shall prevail.
- C. Coordinate work with that of all other trades affecting, or affected by work of this section. Cooperate with such trades to assure the steady progress of all work under the Contract.
- D. The Subcontractor shall be responsible for filing all documents, payment of all fees, and securing of all inspections and approvals necessary for the work of this section.
- E. The Electrical Subcontractor shall carry in the Bid Price all Utility Company and Municipal back charges for all materials furnished and work performed by them in conjunction with this Contract and pay same to the respective agency upon demand. The Electrical Subcontractor shall not be entitled to additional compensation after the submittal of his bid price should he fail, for any reason, to obtain the total back charge costs to be incurred by the Local Utility Companies or Municipal Agencies.

1.2 DEFINITIONS

- A. As used in this section, “provide” means “furnish and install”, and “POS” means “Provided Under Other Sections”.
- B. As used in the Contract Drawings and Specifications for Electrical work, certain non-technical words shall be understood to have specific meanings as follows, regardless of indications to the contrary in the General Conditions of other documents governing the Electrical work.
 - 1. “Furnish” means: Purchase and deliver to the project site complete with every necessary appurtenance and support, all as part of the Electrical work. Purchasing shall include payment of all sales taxes and other surcharges as may be required to assure that purchased item(s) are free of all liens, claims, or encumbrances.
 - 2. “Install” means: Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project, all as part of the Electrical work.
 - 3. “Provide” means: “Furnish” and “Install”.
 - 4. “New” means: Manufactured within the past two (2) years and never before used.
- C. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any electrical item in the Contract Drawings or Specifications for Electrical work

carries with it the instruction to furnish, install and connect the item as part of the Electrical work, regardless of whether or not this instruction is explicitly stated.

- D. It shall be understood that the Specifications and Drawings for Electrical work are complimentary and are to be taken together for a complete interpretation of the Electrical work except that indications on the Contract Drawings, which refer to an individual element of work, take precedence over the Specifications where they conflict.

1.3 SCOPE

- A. Perform work and provide material and equipment as shown on Drawings and as specified or indicated in this Section of the Specifications. Completely coordinate work of this Section with work of other trades and provide a complete and fully functional installation.
 - 1. All other systems hereinafter specified or indicated on the Contract Drawings, complete, leaving ready an electrical system in perfect operating condition.
 - 2. All required staging and scaffolding of any height.
- B. Drawings and Specifications form complimentary requirements; provide work specified and not shown, and work shown and not specified as though explicitly required by both. Although work is not specifically shown or specified, provide supplementary or miscellaneous items, appurtenances, devices and materials obviously necessary for a sound, secure and complete installation.
- C. Before submitting bid, visit and carefully examine site to identify existing conditions and difficulties that will affect work of this Section. No extra payment will be allowed for additional work caused by unfamiliarity with site conditions that are visible or readily construed by an experienced observer. Site visit is particularly important because this is renovation work.
- D. Before starting work in a particular area of the project, visit site and examine conditions under which work must be performed including preparatory work done under other Sections or Contracts or by Owner. Report conditions that might affect work adversely in writing through Contractor to Architect. Do not proceed with work until defects have been corrected and conditions are satisfactory. Commencement of work shall be construed as complete acceptance of existing and preparatory work.

1.4 REGULATORY REQUIREMENTS

- A. Comply with all applicable Federal and State laws, and all Local Codes, By-laws and Ordinances.
- B. Where provisions of the Contract Documents conflict with any codes, rules or regulations, the latter shall govern. Where the contract requirements are in excess of applicable codes, rules or regulations, the contract provisions shall govern unless the Architect rules otherwise.
- C. Request inspections from Authorities Having Jurisdiction, obtain all permits and pay for all fees and inspection certificates as applicable and/or required. All permits and certificates shall be turned over to the Owners at the completion of the work. Copies of permits shall be given to the resident engineer prior to the start of work.
- D. Unless otherwise specified or indicated, materials and workmanship and equipment performance shall conform with the latest edition of the following standards, codes, Specifications, requirements and

regulations:

1. State Building Code.
 2. State Electrical Code.
 3. National Fire Protection Association (NFPA).
 4. Local Town Regulations and By-Laws.
 5. Underwriter's Laboratories, Inc. (UL).
 6. National Electrical Manufacturer's Association (NEMA).
 7. American National Standards Institute (ANSI).
- E. All Electrical work shall meet or exceed any other state and local codes and/or Authorities Having Jurisdiction including all other standards indicated herein.

1.5 SUBMITTALS

A. This paragraph shall supplement Division 1.

B. Definitions:

1. Shop Drawings: Information prepared by the Contractor to illustrate portions of the work in more detail than shown in the Contract Documents.
2. Manufacturer's Product Data: Information prepared by the manufacturer which depicts standard equipment.

C. Submittals, Procedures and Format:

1. Review submittal packages for compliance with Contract Documents and then submit to Architect for review. Submit transparency and two (2) blue or black-line reproductions of each Shop Drawing larger than 8-1/2" x 11". Submit eight (8) sets of each smaller shop drawing. After review, transparency original of each large Shop Drawing and six (6) sets of each small shop drawing will be returned with reviewer's marks. Electronically submitted shop drawings are acceptable.
2. Each Shop Drawing shall indicate in title block, and each Product Data package shall indicate on cover sheet, the following information:
 - a. Title.
 - b. Name and location of project.
 - c. Names of Architect, Engineer, Contractor and Subcontractor(s).
 - d. Names of Manufacturer, Supplier, Vendor, etc.
 - e. Date of submittal.
 - f. Whether original submittal or resubmitted.

3. Shop Drawings and/or Manufacturer's Product Data shall contain detailed dimensional Drawings, accurate and complete description of materials of construction, manufacturer's published performance characteristics and capacity ratings (performance data alone is not acceptable), electrical requirements and wiring diagrams. Drawings shall clearly indicate location (terminal block or wire number), voltage and function for all field terminations, and other information necessary to demonstrate compliance with all requirements of Contract Documents.

D. Acceptable Manufacturers:

1. The Architect's Mechanical/Electrical design for each project is based on the single manufacturer listed in the schedule or shown on the Contract Drawings. In Division 26 of these Specifications certain "Alternate Manufacturers" are listed as being acceptable. These are acceptable only if, as a minimum, they:
 - a. Meet all performance criteria listed in the schedules and outlined in the Specifications.
 - b. Have identical operating characteristics to those called for in the Specifications.
 - c. Fit within the available space it was designed for, including space for maintenance and component removal, with no modifications to either the space or the product. Clearances to walls, ceilings and other equipment will be at least equal to those shown on the Contract Documents. The fact that a manufacturer's name appears as acceptable shall not be taken to mean the Architect has determined that the Manufacturer's products will fit within the available space. This determination is solely the responsibility of the Contractor.
 - d. For equipment mounted in areas where structural matters are a consideration, the products must have a weight no greater than the product listed in the schedules or Specifications.
 - e. Products must adhere to all architectural considerations including, but not limited to, being the same size and of the same physical appearance as scheduled or specified products.

E. Substitutions: Substitution of products by manufacturers other than those listed shall only be done in accordance with subparagraph "F" "Substitutions and Deviations".

F. Substitutions and Deviations:

1. Deviations from the Contract Documents and the substitution of materials or equipment relative to the "Acceptable Manufacturers" referred to above shall be requested individually in writing whether deviations result from field conditions, standard shop practice, or other cause. Submit letter with transmittal of Shop Drawings which flags the substitution or deviation to the attention of the Architect. The letter shall describe changes in the system shown and physical characteristics (connections to adjacent materials, electrical services, service access requirements, and other characteristics), and differences in operating characteristics or cycles.
2. Without letters flagging the substitution or deviation to the Architect, it is possible that the Architect may not notice such substitution or deviation or may not realize its ramifications. Therefore, if such letters are not submitted to the Architect, the Contractor shall hold the Architect and his consultants harmless for any and all adverse consequences resulting from the deviations being implemented. Adverse consequences shall include, but not be limited to, excessive noise, excessive maintenance, shortened longevity, spatial coordination problems, and inadequate performance versus scheduled design. This shall apply regardless of whether the Architect has reviewed or approved Shop Drawings containing the deviation, and will be strictly enforced.

3. Do not request substitute materials or equipment unless identical material or equipment has been operated successfully for at least three (3) consecutive years. Such materials and equipment shall be a regular cataloged item shown in the current catalog of the manufacturer. When deviation or substitution is permitted, coordinate fully with related changes to Architectural, Structural, Plumbing, Fire Protection, Mechanical, and other work. Ensure that related changes necessary for coordination of substituted items are made within the Contract Price. Assume full responsibility for safety, operation and performance of the altered system. Any extra costs incurred to the project based on the use of alternate manufacturers shall be borne by the Contractor who has requested the substitution.
4. Substitutions of equipment, systems, etc. requiring approval of local Authorities must comply with such regulations and be filed by the Contractor (should filing be necessary).
5. Consideration will not be given to claims that the substituted item meets the performance requirements with lesser construction. Performance, as delineated in schedules and in the Specifications, shall be interpreted as minimum performance.
6. Approval of proposed deviations or substitutions, if any, will be made at discretion of Architect.
7. If equipment is proposed for substitution that is not tested and rated according to industry-wide standards, the Architect shall have the right to have performance tests completed, at the Contractor's expense, to confirm the manufacturer's performance claims.

G. Submittal Notations: Submittals will be returned from the Architect marked as illustrated below:

<input type="checkbox"/> NO EXCEPTION TAKEN	<input type="checkbox"/> ACCEPTED AS NOTED
<input type="checkbox"/> NOT ACCEPTED	<input type="checkbox"/> REVISE AND RESUBMIT

1. Checking is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action shown is subject to the requirements of the Contract Drawings and Specifications. Contractor is responsible for dimensions which shall be confirmed and correlated at the job site; fabrication process and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.

H. Schedule: Incorporate the Shop Drawing review period into the construction schedule so that work is not delayed. Contractor shall assume full responsibility for delays caused by not incorporating the following Shop Drawing review time requirements into his project schedule. Allow at least ten (10) working days, exclusive of transmittal time.

I. List of Proposed Equipment and Materials: Within four (4) weeks after Award of Contract and before ordering materials or equipment, submit a complete list of proposed materials and equipment and indicate manufacturer's names and addresses. No consideration will be given to partial lists submitted out of sequence.

J. Responsibility:

1. The intent of submittal review is to check for capacity, rating, and certain construction features. Contractor shall ensure that work meets requirements of the Contract Documents regarding information

that pertains to fabrication processes or means, methods, techniques, sequences and procedures of construction; and for coordination of work of this and other Sections. Work shall comply with submittals marked "REVIEWED" to extent that they agree with the Contract Documents. Submittal review shall not diminish responsibility under this Contract for dimensional coordination, quantities, installation, wiring, supports and access for service, nor the shop drawing errors or deviations from requirements of the Contract Documents. The Architect's noting of some errors while overlooking others will not excuse the Contractor for proceeding in error. Contract Document requirements are not limited, waived, nor superseded in any way by review.

2. Inform Subcontractors, Manufacturers, Suppliers, etc., of scope and limited nature of review process and enforce compliance with the Contract Documents.

K. Material and equipment requiring Shop Drawing and/or Manufacturer's Data Submittals shall include but not be limited to:

1. Fire alarm system with wiring diagram and schedule.
2. Wiring and cables.
3. Conduit.

1.6 SURVEYS AND MEASUREMENTS

A. Base all required measurements, both horizontal and vertical, on reference points established by the General Contractor and be responsible for the correct laying out of the Electrical work. In the event of a discrepancy between actual measurements and those indicated, notify the General Contractor in writing. Do not proceed with the work required until written instructions have been issued by the General Contractor.

1.7 COORDINATION

- A. Electrical Drawings are diagrammatic. They indicate general arrangements of Mechanical and Electrical systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with Structural and other trades and to meet Architectural requirements.
- B. Work shall be performed in cooperation with other trades on the project and so scheduled as to allow speedy and efficient completion of the work.
- C. Furnish to other trades advance information on locations and sizes of all frames, boxes, sleeves and openings needed for their work. Furnish information and Shop Drawings necessary to allow trades affected by the work to install their work properly and without delay.
- D. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Architect. Where the Electrical work shall interfere with the work of other trades, assist in coordinating the space conditions to make satisfactory adjustments before installation. Without extra cost to the Owners, make reasonable modifications to the work as required by normal Structural interferences.
- E. If any Electrical work has been installed before coordination with other trades so as to cause interference

with the work of such trades, all necessary adjustments and corrections shall be made by the trades involved without extra cost to the Owners.

- F. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Architect for review and approval.
- G. Protect all materials and work of other trades from damage which may be caused by the Electrical work, and repair all damages without extra cost to the Owners.

1.8 INSTALLATION REQUIREMENTS

- A. The arrangement of all Electrical work shown on the Contract Drawings is diagrammatic only and indicates the minimum requirements of the work. Conditions at the building including actual measurements shall determine the details of the installation. All work shall be laid out and installed so as to require the least amount of cutting and patching.
- B. Review the Architectural Drawings and Specifications before ordering any material and equipment. Any discrepancies shall be brought to the attention of the Architect for his determination prior to proceeding with the work.

1.9 TYPICAL DETAILS

- A. Typical details where shown on the Contract Drawings shall apply to each and every item of the project where such items are applicable. They are not repeated in full on the Contract Drawings, which in many cases are diagrammatic only, but with the intention that such details shall be incorporated in full. Any alternate method proposed for use by the Contractor shall have the prior approval of the Architect.

1.10 SLEEVES, INSERTS

- A. Furnish and install all sleeves, inserts, anchor bolts and similar items to be set into masonry or concrete, as required for Mechanical and Electrical work. Internal diameter of sleeve ball shall be 1/2" larger than the outside diameter of the pipe or insulation covered line passing through it.

1.11 CORING, DRILLING

- A. Core, cut and/or drill all small holes 4.5" diameter or less in walls, floors and ceiling required for the installation of sleeves, supports, and conduit for the Electrical work.

1.12 FIRESTOPPING, SMOKEPROOFING AND WATERPROOFING

- A. All penetrations made through fire rated assemblies (structures or partitions) shall be completely and properly fire sealed with the appropriate firestop systems installed in accordance with the Manufacturer's recommendations. The firestop material UL listed fire rating shall match or exceed the fire rated assemblies. Verify with Architect if project is utilizing a specified product. If not, provide product manufactured by Hilti, Nelson or STI.
- B. Provide waterproofing of all materials which penetrate a floor, exterior wall, slab or roof. All sleeves shall extend a minimum of 3 inches above floor or roof. All penetrations thru building foundation walls shall utilize Link-Seal products or approved equal.

- C. All device, outlet and junction boxes installed within fire rated walls or ceilings shall be provided with a fire rated moldable putty pad. The putty pad shall be a one component, ready to use, intumescent elastomer capable of expanding a minimum of 3 times a 1000°F and the material shall be suitable for overhead, vertical and horizontal fire steps. The putty shall be listed by an independent testing agency such as U.L. or FM and shall meet or exceed the requirements of the applicable sections of the IBC, NFPA 5000, NEC & NFPA 101. Provide 3M fire barrier moldable putty pads MPP+ approved equal.

1.13 COMMISSIONING OF SYSTEMS

- A. Provide the services of a factory authorized technician to instruct and direct the Owner in the operation and maintenance of indicated systems and/or equipment. Cost of such instruction shall be for a minimum of five (5) days for Electrical Contractor to assist in operation and troubleshooting of system. Technicians for each system shall be available for a minimum of four (4) hours. The Electrical Subcontractor shall be available throughout the entire Commissioning Phase to operate the systems/equipment. Systems and/or equipment that shall be commissioned include the following:
 - 1. Fire Alarm systems.
- B. Upon completion of all tests, the Electrical Subcontractor shall repair and/or replace any defective equipment. Once replaced and/or repaired, all Commissioning shall be performed.
- C. Refer to Section 26 00 00 paragraph 3.2 for additional requirements.

1.14 ACCESSIBILITY

- A. Install all work such that parts requiring periodic inspection, operation, maintenance and repair are readily accessible.
- B. Furnish all access panels appropriate to particular conditions, to be installed by trades having responsibility for the construction of actual walls, floors or ceilings at required locations.

1.15 SUPPLEMENTARY SUPPORTING STEEL

- A. Provide all supplementary (non-structural) steelwork required for mounting or supporting equipment and materials.
- B. Steelwork shall be firmly connected to building construction as required. Locations and methods of attachment shall be approved by the Architect.
- C. Steelwork shall be of sufficient strength to allow only minimum deflection in conformity with manufacturer's published requirements.
- D. All supplementary steelwork shall be installed in a neat and workmanlike manner parallel to floor, wall and ceiling construction: all turns shall be made at forty-five and ninety degrees, and/or as dictated by construction and installation conditions.
- E. All manufactured steel parts and fittings shall be galvanized.

1.16 TOOLS AND EQUIPMENT

- A. Provide all tools and equipment required for the fabrication and installation of the Mechanical and Electrical equipment at the site.

1.17 PORTABLE AND DETACHABLE PARTS

- A. Contractors shall retain in their possession all portable and/or detachable parts and portions of materials, devices, equipment, etc. necessary for the proper operation and maintenance of the Mechanical and Electrical systems until final completion of the work, at which time they shall be handed over to the Owners.

1.18 RECORD DRAWINGS, PROJECT CLOSEOUT

- A. As work progresses and for the duration of Contract, maintain a complete and separate set of prints of Contract Drawings at job site at all times. Record work completed and all changes from original Contract Drawings clearly and accurately including work installed as a modification or addition to the original design. Work shall be updated on a weekly basis and shall be made available for review by Architect. Failure to perform this work shall be reason for withholding requisition payments. In addition, take photographs of all concealed equipment in gypsum board ceilings, shafts, and other concealed, inaccessible work. At completion of work, make copies of photographs with written explanation on back. These shall become part of Record Documents.
- B. At completion of work prepare a complete set of Record Drawings utilizing AutoCAD produced drawings showing all systems as actually installed, including all fire alarm and electrical circuitry. Submit three (3) sets of prints to Architect for comments as to compliance with this section.
- C. The Architect will not certify the accuracy of the Record Drawings. This is the sole responsibility of the Electrical Contractor.
- D. This trade shall submit the Record Drawings for approval by the Fire and Building Departments in a form acceptable to the departments, when required by the jurisdiction.
- E. Record Drawings shall show record condition of details, sections, riser diagrams, control changes and corrections to schedules. Schedules shall show actual manufacturer, make and model numbers of final equipment installation.

1.19 GUARANTEE/WARRANTY

- A. Guarantee and 24 Hour Service:
 - 1. Guarantee Work of this Section in writing for not less than one (1) year following the date of acceptance by the Owner. If the equipment is used for temporary power etc, prior to acceptance by the Owner, the bid price shall include an extended period of warranty covering the one (1) year of occupancy, starting from the date of acceptance by the Owner. The guarantee shall repair or replace defective materials, equipment, workmanship and installation that develop within this period, promptly and to the Architect's satisfaction and correct damage caused in making necessary repairs and replacements under guarantee within Contract Price.
 - 2. In addition to guarantee requirements of Division 1 and of Subparagraph A above, obtain written equipment and material warranties offered in manufacturer's published data without exclusion or limitation, in Owner's name.

3. Upon receipt of notice from the Owner of failure of any part of the systems or equipment during the warranty period, the affected part or parts shall be replaced by this Contractor without any reimbursement.
4. Replace material and equipment that require excessive service during guarantee period as defined and as directed by Architect.
5. Provide 24 hour service beginning on the date the project is accepted by the Owner, whether or not fully occupied, and lasting until the termination of the guarantee period. Service shall be at no cost to the Owner. Service can be provided by this Contractor or a separate service organization. Choice of service organization shall be subject to Architect and Owner approval. Submit name and a phone number that will be answered on a 24 hour basis each day of the week, for the duration of the service.
6. Submit copies of equipment and material warranties to Architect before final payment.
7. At end of guarantee period, transfer manufacturer's equipment and material warranties still in force to Owner.
8. This paragraph shall not be interpreted to limit Owner's rights under applicable codes and laws and under this Contract.
9. PART 2 paragraphs of this Specification may specify warranty requirements that exceed those of this paragraph. Those paragraphs shall govern.
10. Use of systems provided under this Section for temporary services and facilities shall not constitute Final Acceptance of Work by Owner, and shall not initiate the guarantee period.
11. Provide manufacturer's engineering and technical staff at site to analyze and rectify problems that develop during guarantee period immediately. If problems cannot be rectified immediately to Owner's satisfaction, advise the Architect in writing, describe efforts to rectify situation, and provide analysis of cause of problem. The Architect and/or Engineer will direct course of action.

1.20 OPERATING, INSTRUCTION AND MAINTENANCE MANUALS

- A. Refer to Section 017000 – CONTRACT CLOSEOUT for submittal procedures pertaining to operating and maintenance manuals.
- B. Each copy of the approved operating and maintenance manual shall contain copies of approved Shop Drawings, equipment literature, cuts, bulletins, details, equipment and engineering data sheets and typewritten instructions relative to the care and maintenance for the operation of the equipment, all properly indexed. Each manual shall have the following minimum contents:
 1. Table of Contents.
 2. Introduction:
 - a. Explanation of manual and its purpose and use.
 - b. Description of the electrical systems.
 - c. Safety precautions necessary for equipment.

- d. Illustrations, schematics and diagrams.
 - e. Installation drawing.
3. Maintenance:
- a. Maintenance and lubricating instructions.
 - b. Replacement charts.
 - c. Trouble-shooting charts for equipment components.
 - d. Testing instructions for each typical component.
 - e. Two (2) typed sets of instructions for ordering spare parts. Each set shall include name, price, telephone number and address of where they may be obtained.
4. Manufacturer's Literature:
- a. The equipment for which Shop Drawings have been submitted and approved.

1.21 QUALITY ASSURANCE

- A. The requirements of the State Building Code and Local regulations establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified herein.
- B. All work shall comply with the latest editions of the codes as referenced herein.
- C. Follow manufacturer's directions for articles furnished, in addition to directions shown on Drawings or specified herein.
- D. Protect all work, materials, and equipment from damage during process of work. Replace all damaged or defective work, materials and equipment without additional cost to the Owner.
- E. All equipment and materials for permanent installation shall be the products of recognized manufacturers and shall be new.
- F. Equipment and materials shall:
 - 1. Where normally subject to Underwriters Laboratory Inc. listing or labeling services, be so listed and labeled.
 - 2. Be without blemish or defect.
 - 3. Not be used for temporary light and power purposes.
 - 4. Be in accordance with the latest applicable NEMA standards.
 - 5. Buy products which will meet with the acceptance of all Authorities Having Jurisdiction over the work. Where such acceptance is contingent upon having the products examined, tested and certified by Underwriters or other recognized testing laboratory, the product shall be so examined, tested and certified.

- G. Except for conduit, conduit fittings, outlet boxes, wire and cable, all items of equipment or material of one generic type shall be the product of one manufacturer throughout.
- H. For items which are to be installed but not purchased as part of the Electrical work, the Electrical work shall include:
 - 1. The coordination of their delivery.
 - 2. Their unloading from delivery trucks driven into any point on the property line at grade level.
 - 3. Their safe handling and field storage until the time of permanent placement in the project.
 - 4. The correction of any damage, defacement or corrosion to which they may have been subjected. Replacement, if necessary, shall be coordinated with the Contractor who originally purchased the item.
 - 5. Field erection and internal wiring as necessary for their proper operation.
 - 6. Mounting in place, including the purchase and installation of all dunnage, supporting members, and fastenings, necessary to adapt them to architectural and structural conditions.
- I. Items which are to be installed but not purchased as part of the electric work shall be carefully examined upon delivery to the project. Claims that any of these items have been received in such condition that their installation will require procedures beyond the reasonable scope of the electric work will be considered only if presented in writing within one (1) week of the date of delivery to the project of the items in question. The electric work includes all procedures, regardless of how extensive, necessary to put into satisfactory operation, all items for which no claims have been submitted as outlined above.

1.22 DELIVERY, STORAGE AND HANDLING

- A. All materials for the work of this section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the products' and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

1.23 STAGING AND SCAFFOLDING

- A. Provide staging and scaffolding for all the work of this section complying with Division 1 requirements.

1.24 EXTRA MATERIALS

- A. Furnish extra materials as indicated below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
 - 1. 10% of each total pull stations and smoke detectors installed.

1.25 PHASING, DEMOLITION AND MAINTAINING EXISTING SERVICES

- A. During the execution of the work, required relocation, etc., of existing equipment and systems in the existing building areas where new work is to be installed or new connections are scheduled to be made, shall be performed by the Electrical Subcontractor, as required by job conditions and as determined by the

Architect in the field, to facilitate the installation of the new system, while demolition, relocation work or new tie ins will be performed. Outages required for construction purposes shall be scheduled for the shortest practical period of time, in coordination with the Owner's designated representative, for specified, mutually agreeable periods of time, after each of which the interruption shall cease and the service shall be restored. This procedure shall be repeated to suit the Owner's working schedule, as many times as required until all work is completed. Any outages of service shall be approved by the Owner, prior to commencing the work. No outages or shutdowns of service shall occur without the written authorization of the Owner prior to commencing the work. Give notice of any scheduled shutdowns, a minimum of two (2) weeks in advance. Owner shall make their best efforts to meet this request without adversely affecting the electric service to the existing building.

- B. Prior to any deactivation and relocation or demolition work, consult the Contract Drawings and arrange a conference with the Architect and Owner's Representative in the field to inspect each of the items to be deactivated, removed or relocated. Care shall be taken to protect all equipment designated to be relocated and reused or to remain in operation and be integrated with the new systems.
- C. All deactivation, relocation and temporary tie-ins of electrical systems and equipment shall be provided by the Electrical Subcontractor. All demolition and removal of electrical systems and equipment designed to be demolished shall be provided by the Electrical Subcontractor. Place all demolished electrical materials except hazardous materials (PCB lighting ballasts, fluorescent lamps, etc.) as determined by the Authorities Having Jurisdiction in General Contractor's dumpster. All hazardous electrical materials shall be legally disposed of by the Electrical Subcontractor.
- D. The Owner reserves the right to inspect the material scheduled for removal and salvage any items he deems usable as spare parts.
- E. Phasing:
 - 1. The Electrical Subcontractor shall construct the subject project in phases as directed by the Architect to suit the project progress schedule, as well as the completion date of the project.
 - 2. For additional information related to phasing, review the General Conditions and Supplementary Conditions and the Architectural Drawings.

PART 2 PRODUCTS

2.1 GENERAL

- A. Product Specifications are written in such a manner so as to specify what materials may be used in a particular location or application and therefore do not indicate what is not acceptable or suitable for a particular location or application. As an example: Non-metallic sheathed cable is not specified; therefore it is not acceptable.
- B. For purpose of establishing a standard of quality and not for purposes of limiting completion, the basis of this Specification is upon specified models and types of equipment and materials, as manufactured by specified manufacturers.
- C. In all cases, standard cataloged materials and systems have been selected. Materials such as lighting fixtures specially manufactured for this particular project, and not part of a manufacturer's standard product

line, will not be acceptable. In the case of systems, the system components shall be from a single source regularly engaged in supplying such systems. A proposed system made up of a collection of various manufacturers products will be unacceptable.

- D. Where Specifications list manufacturers names and/or “as approved” or “equal approved by Designer”, other manufacturers equipment will be considered if equipment meets Specification requirements and has all features of the specified items as are considered essential by the Architect.
- E. All materials shall be new and shall be UL listed.

2.2 RACEWAYS AND FITTINGS

A. Raceways – General:

1. No raceway shall be used smaller than 3/4" diameter. No conduit shall have more than three (3) 90° bends in any one run, and where necessary, pull boxes shall be provided.
2. Thin wall conduit (EMT), conforming to, and installed in accordance with, Article 358 of NFPA 70 shall be zinc coated steel, conforming to industry standards, may be used in masonry block walls, stud partitions, above furred ceilings where exposed but not subject to mechanical damage, and shall be used for fire alarm work.
3. Where indicated on the project drawings provide color coded EMT as follows:
 - a. Red – Fire and Emergency Systems.
4. Acceptable Manufacturers:
 - a. Wheatland Tube Company
 - b. Allied Tube
 - c. Western Tube & Conduit
 - d. Carlon
 - e. Perma-Cote Supreme
 - f. Cantex
5. Fittings:
 - a. Provide insulated bushings on all raceways that house conductors #4 AWG or larger at all threaded fittings no matter what the size of the conductor.
 - b. Manufacturer’s standard fittings shall be used for raceway supports.
 - c. Expansion Fittings: Expansion fittings shall be used where structural and concrete expansion joints occur and shall include a ground strap.
 - d. Couplings for rigid metal conduit and IMC shall be threaded type. Provide insulated bushings.
 - e. All fittings for EMT conduit shall be steel. No die-cast fittings are allowed. Set screw and compression connectors are allowed.
 - f. Threadless fittings for EMT shall be watertight compression type. All fittings shall be concrete tight.

- g. Cable supports in vertical raceways shall be of the split wedge type. Armored cable supports for vertical runs to be of wire mesh basket design.
- h. Wall entrance seals shall be equal to O.Z. Gedney type “WSK” or Link-Seal.
- i. Couplings, elbows and other fittings used with rigid nonmetallic raceways shall be of the solvent cemented type to secure a waterproof installation.
- j. Acceptable manufacturers:
 - 1) O.Z. Gedney
 - 2) Crouse Hinds
 - 3) American Fittings
 - 4) Hubbell
 - 5) Thomas & Betts

2.3 WIRING MATERIALS

- A. Building Wire and Cable shall be copper with 600V insulation, THWN for branch circuitry and XHHW for feeders.
- B. Conductors shall be of soft drawn 98% minimum conductivity properly refined copper, solid construction where No. 10 AWG and smaller, stranded construction where No. 8 AWG and larger.
- C. Exterior of wires shall bear repetitive markings along their entire length indicating conductor size, insulation type and voltage rating.
- D. Exterior of wires shall be color coded, so as to indicate a clear differentiation between each phase and between each phase and neutral. In all cases, grounded neutral wires and cables shall be identified by the colors “white” or “gray”. In sizes and insulation types where factory applied colors are not available, wires and cables shall be color coded by the application of colored plastic tapes in overlapping turns at all terminal points, and in all boxes in which splices are made. Colored tape shall be applied for a distance of 6 inches along the wires and cables, or along their entire extensions beyond raceway ends, whichever is less.
- E. Final connections to motors shall be made with 18” of neoprene sheathed flexible conduit.
- F. Minimum branch circuit conductor size shall be No. 12 AWG installed in conduit. Motor control circuit wiring shall be minimum No. 14 AWG installed in conduit.
- G. Fire alarm and security system wiring shall be per manufacturer’s recommendations.
- H. Other wires and cables required for the various systems described elsewhere in this section of the Specifications shall be as specified herein, as shown on the Contract Drawings, or as recommended by the manufacturer of the specific equipment for which they are used, all installed in conduit.
- I. Metal clad sheathed cable NFPA 70, type MC may be used for branch circuitry where run concealed, and not subject to physical damage. All type MC cable used shall contain a full size insulated ground conductor. All conductors shall be copper. All type MC cable insulation used shall have voltage rating of 600 volts, shall have a temperature rating of 75° C, and shall be thermoplastic material. Armor material

shall be steel and armor design shall be interlocked metal tape. Fire alarm rated MC cable may be used for fire alarm work where concealed and acceptable to the Local Authorities Having Jurisdiction.

- J. Wiring materials shall be manufactured by Southwire, Prysmian, General Cable, or equal.

2.4 OUTLET, JUNCTION, PULL BOXES AND WIRING TROUGHS FOR ALL SYSTEMS

A. Outlets:

1. Each outlet in wiring or raceway systems shall be provided with an outlet box to suit conditions encountered. Boxes installed in normally wet locations shall be of cast-metal type having hubs. Concealed boxes shall be cadmium plated or zinc coated sheet metal type. Old work boxes with Madison clamps are not allowed in new construction.
2. Each box shall have sufficient volume to accommodate number of conductors in accordance with requirements of NFPA 70. Boxes shall not be less than 1-1/2" deep unless shallower boxes are required by structural conditions and are specifically approved by Architect. Ceiling and bracket outlet boxes shall not be less than 4" octagonal except that smaller boxes may be used where required by particular fixture to be installed. Flush or recessed fixtures shall be provided with separate junction boxes when required by fixture terminal temperature requirements. Switch and receptacle boxes shall be 4" square or of comparable volume.
3. Acceptable Manufacturers:
 - a. Appleton
 - b. Crouse Hinds
 - c. Steel City
 - d. RACO

- B. Pull and Junction Boxes: Where necessary to terminate, tap off, or redirect multiple raceway runs or to facilitate conductor installation, furnish and install appropriately designed boxes. Boxes shall be fabricated from code gauge steel assembled with corrosion resistant machine screws. Box size shall be as required by Code. Where intermediate cable supports are necessary because of box dimensions, provide insulated removable core brackets to support conductors. Junction boxes are to be equipped with barriers to separate circuits. Where splices are to be made, boxes shall be large enough to provide ample work space. All conductors in boxes are to be clearly tagged to indicate characteristics. Boxes shall be supported independently of raceways. Junction boxes in moist or wet areas shall be galvanized type. Boxes larger than 4 inches square shall have hinged covers. Boxes larger than 12 inches in one dimension will be allowed to have screw fastened covers, if a hinged cover would not be capable of being opened a full 90 degrees due to installation location.

2.5 FIRE ALARM SYSTEM

A. Scope:

1. Provide complete networked analog/addressable fire detection, evacuation alarm and control network in compliance with all specifications, drawings and applicable code requirements.
2. System shall be a networked microprocessor based fire alarm system which will integrate peripheral

- devices onto system via digital data communications.
3. Each initiating device shall have full analog detection capabilities; identify its' exact location, and shall operate as described elsewhere in these specifications.
 4. Work in this section, as shown or specified, shall be in accordance with related Contract Documents.
 5. Provide automatic and manual, closed circuit, multiplex fire alarm communications according to Contract Documents, wired, connected and left in first class operating condition.
 6. Final connections, testing, and adjusting of system shall be done under direct supervision of system supplier.
 - a. System design and installation shall conform to following standards:
 - 1) Equipment shall be UL listed for its intended purpose, including UL 864 (UOJZ, UOXX, UOQY and UUKL), 1480 and 1971.
 - b. NFPA standards 70, 72, 90A, 92A, and 101.
 - c. Current State Building, Electrical and Life Safety Codes.
 - d. Americans with Disabilities Act (ADA).
 - e. Requirements of local Authorities Having Jurisdiction, including permitting and acceptance procedures.
 7. Shop Drawings shall include:
 - a. Complete point-to-point riser diagram showing all equipment and size, type and number of conductors and devices.
 - b. Large scale drawings of control panels, annunciators, transponders, showing module placement and spare capacity allowances.
 - c. Complete, itemized bill of materials with quantities, descriptions.
 - d. Original catalog data sheets to assure compliance with these specifications. This equipment shall be subject to approval, and no equipment shall be ordered without prior approval.
 - e. Calculations to support size of standby batteries, notification appliance circuits (NAC) and audio amplifiers submitted. Circuit calculations shall demonstrate proper current draw, voltage drop, wire size considerations and spare capacity allowances. Calculations shall be based on UL nameplate RMS voltage ratings. NAC calculations shall demonstrate 25 percent spare capacity.
 - f. Copy of Original Equipment Manufacturer's Warranty Statement.
 - g. Complete description of system Sequence of Operation.
 - h. Details of any special installation procedures.
 - i. Complete floor plans showing network nodes and all device locations and corresponding addresses. Point identification lists shall be included to ensure proper coordination of alarm messages and shall include each device type address number and corresponding CCO text message.
 - j. Confirmation that equipment supplier will provide on-site project management and supervision during system installation, and perform system testing and instruction.
 - k. Operation and maintenance manuals.

8. Conform to UL and NFPA standards for testing of completed installation by UL approved testing company.
9. O & M Manuals shall include the following:
 - a. All information submitted in final reviewed shop drawings.
 - b. As-built documentation which incorporates all modifications to completed system, whether made as field change or by change order.
 - c. Include copy of final test report, Record of Completion, as-built documentation and Fire Alarm Support Contracts as described herein.

B. Sequence of Operation:

1. Operation of manual station or activation of any automatic alarm initiating device (system smoke, system heat detector, waterflow) shall initiate system-wide but only in respective building/wing, response according to established response procedures and as follows:
 - a. Initiate transmission of alarm to Municipal Fire Station via Radio Master Box. Include the cost for monitoring at a UL listed central station for a period of one year.
 - b. Sound approved temporal code 3 horn signal over all audio circuits throughout entire building.
 - c. Upon any alarm condition, visual signals shall activate throughout the building. Visual notification shall be synchronized in accordance with applicable code requirements and latest NFPA 72 guidelines.
 - d. Flash an alarm LED and sound an audible signal at each FACP and the Fire Command Location. Upon Acknowledgment, the alarm LED shall light steadily and the audible shall silence. Subsequent alarms shall re-initiate this sequence.
 - e. Visually indicate alarm initiating device type and location via LCD display at all Fire Command Centers.
 - f. Operate prioritized outputs to release magnetically held smoke doors and magnetically locked doors throughout building.
 - g. Activate exterior W/P beacon.
 - h. Store system events in event history file.
 - i. Provide control signal to Lighting Control System to bring all lighting to full brightness.
2. Operation of any tamper switch, charging of pre-action system, or activation of other device designated to initiate system Supervisory condition shall cause the following to occur:
 - a. Flash Supervisory LED and sound audible tone at FACP and each network panel. Upon Acknowledgment, LED shall light steadily and audible shall silence. Subsequent Supervisory conditions shall re-initiate this sequence.
 - b. Visually indicate device type and location via LCD display located at FACP and remote annunciators.
 - c. Visually annunciate type of initiating device and its zone, floor or area as required on system annunciators. In addition, Supervisory LED and audible tone will sound. Upon Acknowledgment, LED shall light steadily and audible shall silence. Subsequent Supervisory conditions shall re-initiate this sequence.

- d. Record event in event history log. Restorations shall likewise be recorded.
 3. In event of System Trouble condition such as device removed, loss of AC Power or wiring fault, system Trouble condition shall occur as follows:
 - a. Flash Trouble LED and sound audible tone at FACP and each network panel. Upon Acknowledgment, LED shall light steadily and the audible shall silence. Subsequent Trouble conditions shall re-initiate this sequence.
 - b. Initiate reporting of event to designated staff members via email notification as required and described herein.
 - c. Visually indicate device type and location via LCD display located at FACP and network annunciator panel.
 - d. Visually annunciate type of initiating device and its zone, floor or area as required on all system annunciators. In addition, Trouble LED and audible tone shall sound. Upon Acknowledgment, LED shall light steadily and audible shall silence. Subsequent Trouble conditions shall re-initiate this sequence.
 - e. Record event in event history log. Restorations shall likewise be recorded.
- C. General Requirements:
1. Fire alarm system shall be designed and UL and FM approved for Fire, Audio Evacuation and Security applications. System operational characteristics shall be stored in non-volatile EEPROM memory, shall be field programmable and capable of being edited with no factory involvement.
 2. System shall support analog sensing techniques to monitor individual devices which enables user to set sensitivity parameters. Inputs shall be subject to multi-level alarm verification. System shall be capable of reporting status and sensitivity of each device and vectoring this information to printer. System shall automatically identify any detector which becomes dirty (maintenance alert), prior to false alarming.
 3. System shall be supported by standby batteries. In event of loss of primary power, batteries shall support 60 hours of full supervisory operation followed by 15 minutes of alarm.
 4. System shall be capable of nine levels of alarm prioritization, and allow control by event, and may include cross zoning, stepping, and/or logic statement inputs.
 5. Equipment shall be new and unused. Components and systems shall be designed for uninterrupted duty. Equipment, materials and accessories covered by these requirements shall be provided by single manufacturer, or if provided by different manufacturers, recognized as compatible by both manufacturers.
 6. Control equipment shall have transient protection devices to comply with UL 864 requirements.
 - a. Isolated Loop Circuit Protector (ILCP): Provide isolated loop circuit protection device on all fire alarm circuits which extend beyond building by either aerial, underground or other methods (walkways, bridges or other above ground connectors).
 - b. ILCP shall be located as close as practical to point at which circuits leave or enter building. Grounding conductor shall be No. 12 AWG wire having maximum length of 28 feet and connected to unified ground per NEC.

7. Circuiting Guidelines. Each initiating device and indicating circuit shall be electronically supervised and individually addressable. Wiring shall match existing conventions as follows:
 - a. Individual Zone Addressable Modules shall be used to supervise and monitor waterflow, tamper, and status conditions from any related systems or devices.
 - b. Zone Addressable Control Modules and/or programmable relays shall provide auxiliary control functions.
 - c. Addressable loop wiring shall support all devices shown and allow for minimum of 25 percent spare capacity, and be wired in Class A, Style 7 fashion, with circuit isolation by floor and every 18 devices.
 - d. Entire system shall allow minimum of 25 percent spare capacity. This shall apply to all aspects of system including CPU, cabinets, power supplies, amplifiers and batteries.
 - e. Conventional Visual Appliance Circuits shall operate devices shown plus 25 percent spare capacity, and be wired in a Class A, Style Z fashion.

D. Fire Alarm Control Panel:

1. Provide a Fire Alarm Control System. System shall consist of the required Fire Alarm control and remote nodes, each sized to support a minimum of 1000 analog points, expandable to 2500 points. Panels shall be provided with programmable soft switches and associated LED's for panel silence, alarm silence, system reset and drill. Provide lamp test button. Provide individual LED's for power-on, common alarm, supervisory, fault. Adjacent to the fire control panel, provide passive graphic map depicting architectural layout of building with stairwells, elevators, major corridors and egress points shown.
2. Provide each panel with integral power supplies, amplifiers, addressable loop interface cards and standby batteries sized to serve building and/or space as shown. Panel shall have following functions:
 - a. Monitor all initiating devices, report event to fire alarm network, annunciate alarmed device and its' location, capture elevators, conduct smoke control functions, and initiate audio/visual evacuation signaling and control sequences as described herein.
 - b. Conduct municipal and off-site notification from main network panel as described herein.
 - c. Initiating devices shall respond with their condition. Control relays shall be individually addressable by system to respond automatically in event of an alarm of related sensors. Manual override of control sequences and status feedback points shall be individually addressable.
3. Operator Controls: The control panel shall include an operator interface module consisting of 180 character backlit LCD display to display system wide alarm, trouble and supervisory conditions. Provide full system control from Fire Command Center, as well as control switches for status message scrolling, event acknowledgment, System Reset, and Alarm Silence. Display shall have LED's to indicate Power On, Fire Alarm, Supervisory, Trouble and Alarm Silenced status.
4. Addressable Loop Interface: Provide addressable loop interface card for each floor in each building. Each interface card shall be integral to network panel and support digital communications. Each circuit shall support a total circuit capacity of up to 250 analog/addressable detectors and wiring of twisted unshielded pair with distances of up to 12,500 feet.
5. Auxiliary Control / Annunciation: Provide required auxiliary switch and LED modules for discreet

LED annunciation, zone disconnect, HVAC override, or related monitoring and control functions integral to each FACP. As a minimum, provide a minimum of 64 Auxiliary Override and Audio Control switches with status LED's and 8 HOA switches with corresponding status inputs and LED indicators for auxiliary functions, or as required. These are intended for use by Fire Department during events, or by authorized personnel during testing periods. Keypad entered commands for these functions shall not be acceptable

6. Field Power Supplies: Provide Field power supplies with 24VDC operating and NAC Circuits for Visual signals, 6 amps minimum. Each power supply module shall have 4 dedicated Class "A" NAC outputs rated at 3 amps each and charging circuit that will support up to 12AH batteries. Provide necessary interface to synchronize all power supplies together and provide each power supply with independent monitor module for trouble supervision. Field Power Supplies shall be located on Floor/Section which they serve.
7. Provide hard copy printout of system program to be maintained on site.

E. Intelligent System Devices:

1. Provide intelligent analog addressable devices where shown and required. Analog devices shall utilize dual multi-color red/ green LED indicator which shall flash green to denote normal active communication and light red steadily to denote alarm condition. Devices shall be interchangeable with twist-lock bases that support discreet address-setting rotary decade switches. Each base shall support remote LED output, fault isolation circuitry, auxiliary relay contact, or sounder base with integral Piezo horn were such functions are required. Provide wire guards or other physical protection devices as shown on Contract Documents.
2. Provide analog/addressable combination photoelectric smoke and carbon monoxide (CO) detectors at the locations shown on the Contract Drawings. The combination smoke and CO detector shall provide two independent signals (smoke & CO) to the control panel for programming system responses. When mounted in a sounder base, the detector shall be capable of initiating a temporal 3-3-3 when smoke is detected or temporal 4-4-4-4 when CO is detected. Detectors that transmit a common signal to the control panel for both smoke and CO alarms shall not be considered as equals. The detector shall be listed under standards UL-268 and UL-2075. Each smoke detector shall be individually programmable to operate at any one of five (5) sensitivity settings. The detector shall also store pre-alarm and alternate pre-alarm sensitivity settings. Pre alarm sensitivity values shall be configurable in 5% increments of the alarm and alternate alarm sensitivity settings respectively. The detector shall be able to differentiate between a long term drift above the pre alarm threshold and fast rise above the threshold. The detector shall monitor the sensitivity of the smoke sensor. If the sensitivity shifts outside the UL limits, a trouble signal shall be sent to the panel. It shall be possible to automatically change the sensitivity of individual intelligent addressable smoke detectors for day and night (alternate) periods. Each detector shall utilize an environmental compensation algorithm that shall automatically adjust for background environmental conditions such as dust, temperature, and pressure. The detector shall provide a maintenance alert signal when 80% (dirty) of the available compensation range has been used. The detector shall provide a dirty fault signal when 100% or greater compensation has been used. The smoke chamber shall be UL listed for field replacement. The electro-chemical CO sensor shall generate a CO alarm in compliance with UL-2034 requirements. The sensor shall have a nominal six-year life. When the sensor approaches the end of its useful life, it shall transmit a maintenance condition to the control panel, indicating the CO sensor board replacement is required. Only when the sensor is no longer operational shall a trouble condition be sent to the control panel. Sensors that transmit a common trouble indication for both sensor end-of-life and other causes of detector trouble shall not be

considered as equal. Performing a “sensitivity” check from the panel shall report the approximate number months of CO sensor life remaining. Placing the CO detector in test mode shall facilitate the use of direct injection of small quantities of CO to check detector functionality. The CO sensor board shall be UL listed as field replaceable. Replacement of the CO sensor shall not require any field calibration.

3. Photoelectric Smoke Detector: Provide analog addressable photoelectric smoke detectors with adjustable sensitivity range from 0.2 to 3.7 percent obscuration where shown and required. Detectors shall provide complete analog features including alarm verification, environmental compensation, and multi-stage operation, were required.
4. Analog Heat Detectors: Provide Analog Heat Detectors. Analog heat detectors shall be field selectable for fixed temperature rating of 135 or 190 degrees, rate of rise operation of 15 degrees/minute, and will also include a low temperature warning (Supervisory condition) when ambient temperature reaches 40 degrees F. Where otherwise required, provide conventional fixed temperature, weatherproof or explosion proof heat detectors in lieu of analog heat detectors. Conventional device shall be individually addressable via intelligent addressable module which shall be installed in heated, ventilated location.
5. Analog Duct Smoke Detector: Provide analog photoelectric duct-mounted smoke detectors mounted in air ducts where shown and required. Duct detectors shall be programmed for alarm event sequencing or required by AHJ. Each detector shall be supplied with duct-mount housing, remote indicator/test station and sampling tubes sized according to duct width. Provide necessary auxiliary relay outputs via addressable relay control modules with each detector in order to ensure required HVAC control, override and status reporting functions.
6. Intelligent Manual Pull Stations: Provide intelligent addressable manual stations where shown. Station shall be double action with screw terminals, toggle switch, and integral addressable electronics w status LED. Station shall be constructed of red Lexan with white raised letters and key reset switch. Station shall be keyed alike to FACP. Where ambient conditions preclude use of addressable devices, conventional weatherproof pull stations shall be used. Each conventional device shall be individually addressable via intelligent addressable module which shall be installed in heated, ventilated location.
 - a. Provide tamperproof clear Lexan covers with red frame and spacer, and audible trouble alarm, Stopper II or equal where shown.
7. Monitor Module: Provide Zone Addressable input Modules to enable monitoring and supervision of related systems and devices via SLC addressable loop.
8. Relay Module: Provide Addressable Relay to provide supervised control of auxiliary circuits (AHU's, door holders, etc.) via SLC addressable loop. Relay shall provide supervised output rated for 3 amps @ 30VDC or .5 amps at 120VAC. Where current exceeds limitations, provide isolation relay (PAM-1 or equal) rated for required load.
9. Isolation Modules: Where additional circuit isolation is required beyond isolation of the addressable loop interface, provide field-mounted Isolator Modules every 20 devices to protect circuit integrity in event of a wiring fault and ensure Style 6 wiring conventions.
10. Drill Switch: Provide a two position keyed Drill switch with addressable monitor module located as shown on contract drawings. Switch shall be fully programmable to initiate a drill of programmed areas with-out transmitting Municipal Signal. Restoration of key switch to “normal” shall return FACP and

associated control equipment to normal with no other user interface to system.

F. Notification Appliances:

1. Provide flush mounted combination Audio/Visual signaling appliances. Stand-alone devices may be used to augment combination units when necessary. Provide surface mount back boxes and alternate outdoor-rated appliances where ambient conditions dictate. Provide wire guards or other physical protection devices as shown on Contract Documents.
2. Provide synchronized xenon strobes in compliance with NFPA 72, and rated per UL 1971 testing criteria. Strobes shall have effective intensity field selectable by installer in the range of 15CD to 115 CD.
3. Provide audible detector mounting bases suitable for mounting on a 1-gang, 3½ or 4 inch octagon box and 4 inch square box at the locations shown on the Contract Drawings. The bases shall utilize a twist-lock design and provide screw terminals for all field wiring connections. Removal of the respective detector shall not affect communications with other detectors. The audible base shall support all detector types and shall be capable of single or group operation. The audible base shall emit a temporal 3-3-3 fire alarm tone when smoke or heat has been detected. The audible base shall emit a temporal 4-4-4-4 CO alarm tone when CO has been detected. The outputs shall be configurable for low or high output by moving a reversible jumper. The system shall be UL2017 listed for dual signaling for this purpose. The audible bases shall provide a UL-268 reverberant room sound output of 90.8 dBA at 10ft (3m) for temporal 3-3-3 fire alarm and 84.1 dBA at 10 ft.(3m) for temporal 4-4-4-4 CO alarm.

G. System Accessories:

1. Municipal Connection: Provide one (1) telephone dialer/digital Communicator unit for off-site transmission of supervisory signals. Provide the cost for monitoring at a UL listed central station for a period of one year.
2. Sprinkler System Devices: Coordinate following to ensure that required installation and wiring of waterflow and tamper switches is accomplished in manner that will result in complete operable and tested sprinkler system. Each device shall be monitored as separate and distinct point.
 - a. Waterflow shall activate alarm sequence.
 - b. Tamper switches shall activate supervisory condition.
3. Terminal Cabinets: Provide fire alarm terminal cabinets where necessary. Cabinets shall have removable hinged cover with key lock and red finish and are intended to house analog/addressable modules and facilitate filed wiring junctions.
4. Remote Alarm Indicators: Provide remote LED indicators for sensors located behind locked doors. Provide permanent label on each indicator identifying device type and actual location.
5. Exterior Strobe: Provide a flashing weatherproof strobe with minimum 150,000 candlepower output where shown. Strobe shall be properly installed on a weatherproof back box.
6. Auxiliary Power Supplies: Provide distributed network power supplies as required. Power supplies shall communicate directly to main Fire Alarm System via SLC communications to support network-based synchronization, and supervision of each panel for ground fault, loss of AC power and Battery

Failure. Each notification circuit served shall be individually supervised via on-board circuitry.

7. Door Holders: Install flush, surface or floor-mounted 24VDC magnetic door holders where shown and required. Door holders will not be required to operate under standby power, following 30 second delay upon loss of primary AC power.
8. Key Repository: Provide Knox Box or approved equal key repository where shown and in accordance with local requirements.

H. Installation:

1. Installation shall be supervised and tested by system supplier. Work shall be performed by skilled technicians under direction of experienced engineers, all of whom are properly trained and qualified.

I. Wiring:

1. Wiring for system shall be in accordance with Articles 760, 725, and 800 of National Electrical Code and local electrical codes. Cable shall be installed in conduit in accordance with manufacturer's instructions, with outgoing and return loops physically separated in accordance with applicable codes.
2. Provide complete wiring and conduit between all equipment. Devices shall be mounted upon and splices made in UL listed boxes. Wiring splices and transposing or changing of colors will not be permitted.
3. Junction boxes shall be painted red and labeled as 'Fire Alarm System' with decal or approved markings.
4. Fire Alarm control systems and equipment shall be connected to separate dedicated branch circuits, sized as required for proper service. Circuits shall be labeled 'FIRE ALARM'.

J. Final Tests, Records and Warranty:

1. Perform complete final test indicating proper functioning of system in accordance with all applicable codes and standards. Furnish copies of completed test report, as-built documentation and Record of Completion in accordance with NFPA 72 guideline to Owner and Architect for record purposes.
2. System test shall be conducted by UL certified testing company in accordance with UL guidelines and NFPA standards. Each and every device shall be tested in accordance with Manufacturer's recommendations.
3. Provide final test report and Record of Completion indicating proper functioning of the system and conformance to specifications. Test and Certificate of Completion shall be performed by factory-trained qualified technicians employed by Testing Contractor. Each and every device shall be tested, and standalone operation of remote panels shall be verified.
4. Final testing, certification and documentation shall be performed by same company that shall hold and execute Test and Inspection Contract.
5. In addition to pre-acceptance test, provide for complete and final Fire Department Acceptance Testing in accordance with requirements of Authorities Having Jurisdiction and applicable codes.

6. Provide a 3 year warranty from date of final acceptance on all equipment. Labor on installation shall be guaranteed for a period of 1 year. Provide warranty documentation in the submittal.
7. Guarantee all raceways and wiring to be free from inherent mechanical or electrical defects for one year from the date of final acceptance of system.

K. Annual Testing and Support Contracts:

1. Include as part of base bid cost of Test and Inspection contract which will be in effect for 1 Year.
2. Contract shall allow for quarterly tests according to UL, NFPA and local requirements. In addition to required testing and inspections, contract shall include cleaning and sensitivity test of each system detector following first year.
3. Upon expiration of warranty period and initial test and inspection contract, contract shall be renewable upon its expiration at discretion of Building Owner.

L. Training:

1. Provide services of manufacturer's representative-for an unlimited period, during normal business hours, to instruct owner's designated personnel and fire department response teams on operation of system.

M. Spare Equipment:

1. Provide system spare devices as follows:
 - a. Manual stations - quantity of 3.
 - b. System smoke detectors with bases - quantity of 5.
 - c. System heat detectors with bases- quantity of 2.
 - d. Speaker Strobe Units - quantity of 4.
 - e. Strobe only units - quantity of 2.
 - f. Duct smoke detector head and housing - quantity of 2.
 - g. Addressable contact monitor modules - quantity of 2.
 - h. Addressable relay modules - quantity of 2.

PART 3 EXECUTION

3.1 BASIC REQUIREMENTS

A. Adhere to best industry practice and the following:

1. All work shall be concealed.
2. Route circuitry runs embedded in concrete to coordinate with structural requirements.

3. Equip each raceway intended for the future installation of wire or cable with a nylon pulling cord 3/16" in diameter and clearly identify both ends of the raceway.
4. Provide all outlet boxes, junction boxes, and pull boxes for proper wire pulling and device installation. Include those omitted from the Contract Drawings due to symbolic methods of notation.
5. Utilize lugs of the limited type to make connections at both ends of cables installed on the line side of main service overcurrent and switching devices. Provide cable limiters for each end of each service entrance cable.
6. Provide all sleeves through fireproof and waterproof slabs, walls, etc., required for electric work.
 - a. Provide waterproof sealing for the sleeves through waterproof slabs, walls, etc.
 - b. Provide fireproof sealing for the sleeves through fireproof walls, slabs, etc.
 - c. Provide fireproof sealing for the openings in fireproof walls, slabs, etc., resulting from removal of existing electrical sleeves, conduits, poke-thru's etc.
7. No splicing of wires will be permitted in Fire Alarm System.
8. Bundle wiring passing through pull boxes and panelboards in a neat and orderly manner.
9. Turn branch circuits and auxiliary system wiring out of wiring gutters at 90 degrees to circuit breakers and terminal lugs.
10. In electric rooms with equipment rated 800 amps or more and over 6 feet wide that contains overcurrent devices, the Electrical Contractor shall provide a powered Exit sign at 18" AFF at each door.
11. All building mounted photovoltaic equipment shall be installed, tested and maintained in accordance with NFPA 1 Section 11.12.
12. All panelboards shall be labeled in accordance with NFPA 70 Article 408.

3.2 REQUIREMENTS GOVERNING ELECTRICAL WORK IN DAMP OR WET LOCATIONS

- A. Outlets and outlet size boxes shall be of galvanized cast ferrous metal only.
- B. The finish of threaded steel conduit shall be galvanized only.
- C. Wires for pulling into raceways for lighting and appliance branch circuitry shall be limited to "THWN".
- D. Wires for pulling into raceways for feeders shall be limited to "XHHW".
- E. Plates for toggle switches and receptacles shall have gasketed snap shut covers suitable for wet locations while in use.
- F. Final connections of flexible conduit shall be neoprene sheathed.
- G. Apply one (1) layer of half looped plastic electric insulating tape over wire nuts used for joining the conductors of wires.

- H. Enclosures, junction boxes, pull boxes, cabinets, cabinet trims, wiring troughs and the like, shall be fabricated of galvanized sheet metal, shall conform to the following:
 - 1. They shall be constructed with continuously welded joints and seams.
 - 2. Their edges and weld spots shall be factory treated with cold galvanizing compound.
 - 3. Their connection to circuitry shall be by means of watertight hub connectors with sealing rings.
- I. Enclosures for individually mounted switching and overcurrent devices shall be NEMA Class IV weatherproof construction.
- J. The covers, doors and plates and trims used in conjunction with all enclosures, pull boxes, outlet boxes, junction boxes, cabinets and the like shall be equipped with gaskets.
- K. Panels shall be equipped with doors without exception.
- L. The following shall be interpreted as damp or wet locations within building confines:
 - 1. Spaces where any designations indicating weatherproof (WP) or vapor proof appear on the Contract Drawings.
 - 2. Below waterproofing in slabs applied directly on grade.
 - 3. Spaces defined as wet or damp locations by Article 100 of the National Electric Code.

3.3 PULLING WIRES INTO CONDUITS AND RACEWAYS

- A. Delay pulling wires or cables in until the project has progressed to a point when general construction procedures are not liable to injure wires and cables, and when moisture is excluded from raceways.
- B. Utilize nylon snakes or metallic fish tapes with ball type heads to set up for pulling. In raceways 2" trade size and larger, utilize a pulling assembly ahead of wires consisting of a suitable brush followed by a 3-1/2" diameter ball mandrel.
- C. Leave sufficient slack on all runs of wire and cable to permit the secure connection of devices and equipment.
- D. Include circular wedge-type cable supports for wires and cables at the top of any vertical raceway longer than 20 feet. Also include additional supports spaced at intervals which are no greater than 10'. Supports shall be located in accessible pull boxes. Supports shall be of a non-deteriorating insulating material manufactured specifically for the purpose.
- E. Pulling lubricants shall be used. They shall be products manufactured specifically for the purpose.
- F. Slack on wires and cables located in cabinets and pull boxes shall be formed and set in place in groupings corresponding to their occupancy of raceways. They shall also be arranged, with insulators and supports provided where necessary, such that cable shims or other such temporary expedients do not have to be left permanently in place to prevent the wires and cables from shifting when covers or trims are removed.

3.4 REQUIREMENTS FOR THE INSTALLATION OF JUNCTION BOXES, OUTLET BOXES AND PULL

BOXES

- A. Flush wall-mounted outlet boxes shall not be set back to back but shall be offset at least 12” horizontally regardless of any indication on the Contract Drawings.
- B. Locate all boxes so that their removable covers are accessible without necessitating the removal of parts of permanent building structure, including piping, ductwork, and other permanent mechanical elements.
- C. In conjunction with concealed circuitry, abide by one of the following instructions (as may be applicable to the conditions) in order to assure the aforementioned accessibility. (Not required for circuitry concealed by removable suspended ceiling tiles.)
 - 1. For a small (outlet size) box on circuitry concealed in a partition or wall, locate box or fitting so that its removable cover side, (or the face of any applied raised cover) penetrates through to within 1/8” of the exposed surface of the building materials concealing the circuitry and apply a blank or device plate to suit the functional requirements.
 - 2. For a large box on circuitry concealed in a partition, suspended ceiling, or wall, locate box totally hidden but with its removable cover directly behind an architectural access door or panel (included for the purpose, separate from the electric work) in the building construction which conceals the circuitry.
 - 3. For a small (outlet size) box on circuitry concealed above and intended as an outlet for a surface mounted lighting fixture or other such electrical item, locate box so that its removable cover side penetrates through to the exposed surface of the building materials concealing the circuitry. Arrange the mounting of the lighting fixture or other item so that it completely covers the opening in the building construction caused by the box.
 - 4. For a small (outlet size) box on circuitry concealed in a suspended ceiling, and intended as an outlet for a non-demountable type of recessed lighting fixtures or other such electrical items, locate box totally hidden but with its removable cover not more than 1’ away from the building construction opening occupied by the demountable items.
- D. Apply junction and pull boxes in accordance with the following:
 - 1. Include all pull boxes in long straight runs of raceway to assure that cables are not damaged when they are pulled in.
 - 2. Include junction and pull boxes to assure a neat and workmanlike installation of raceways.
 - 3. Include junction and pull boxes to fulfill requirements pertaining to the limitations to the number of bends permitted in raceway between cable access points, the accessibility of cable joints and splices, and the application of cable supports.
 - 4. Include all required junction and pull boxes regardless of indications on the Contract Drawings (which, due to symbolic methods of notation, may omit to show some of them).
- E. Apply outlet boxes in accordance with the following:
 - 1. Unless noted below or otherwise specifically indicated, include a separate outlet box for each individual wiring device, lighting fixture and signal or communication system outlet component.

Outlet boxes supplied attached to lighting fixtures shall not be used as replacements for the boxes specified herein.

2. A continuous row of fixtures of the end-to-end channel type, designed for “through wiring”, and wired in accordance with the specification hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.
 3. A series of separate fixtures, designed for “through wiring”, spaced not more than 4’ apart, and interconnected with conduit or raceway and circuitry which is in accordance with the Specifications hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.
 4. Connection to recessed ceiling fixtures supplied with pigtails may be arranged so that more than one (1), but not more than four (4) such fixtures are connected into a single outlet box. When adopting this procedure:
 - a. Utilize an outlet box no smaller than 5” square by 2-1/2” deep.
 - b. Allow no fixture to be supplied from an outlet box in another room.
 5. Multiple local switches indicated at a single location shall be gang-mounted in a single outlet box.
 6. Include all required outlet boxes regardless of indications on the Contract Drawings (which due to symbolic methods of notation, may omit to show some of them).
- F. Install junction boxes, pull boxes and outlet boxes in conjunction with concealed circuitry.
1. Exclude surface-mounted outlet boxes in conjunction with concealed circuitry.
 2. Exclude unused circuitry openings in junction and pull boxes. In larger boxes each such opening shall be closed with a galvanized sheet steel plate fastened with a continuous weld all around. In small outlet type boxes, utilize plugs as specified for such boxes.
 3. Close up all unused circuitry openings in outlet boxes. Unused openings in cast boxes shall be closed with approved cast metal threaded plugs. Unused openings in sheet metal boxes shall be closed with sheet metal knock-out plugs.
 4. Outlet boxes for switches shall be located at the strike side of doors. Indicate door swings are subject to field change. Outlet boxes shall be located on the basis of final door swing arrangements.
 5. Boxes and plaster covers for duplex receptacles shall be arranged for vertical mounting of the receptacle.
 6. Equip outlet boxes used for devices which are connected to wires of systems supplied by more than one set of voltage characteristics with barriers to separate the different systems.
- G. Barriers in junction and pull boxes of outlet size shall be of the same metal as the box.
1. Barriers in junction and pull boxes which are larger than outlet size shall be of the polyester resin fiberglass of adequate thickness for mechanical strength, but in no case less than 1/4" thick. Each barrier shall be mounted, without fastenings, between angle iron guides so that they may be readily

removed.

3.5 LOCATING AND ROUTING OF CIRCUITRY

- A. In general, all circuitry shall be run concealed except that it shall be run exposed where the following conditions occur:
1. Horizontally at the ceiling of permanently unfinished spaces which are not assigned to mechanical or electrical equipment.
 2. Horizontally and vertically in mechanical equipment spaces.
 3. Horizontally and vertically in electric equipment rooms.
- B. Concealed circuitry shall be so located that building construction materials can be applied over its thickest elements without being subject to spalling or cracking.
- C. All circuitry and raceways shall not be run within slabs. If field conditions requires raceways to be embedded in field-poured structural building construction concrete fill or slab shall conform to the following:
1. All proposed embedded raceways shall be indicated on plan and elevation and submitted to the Architect and Structural Engineer for review and written approval prior to installation. Any costs associated with the review and approval shall be borne by the Electrical Subcontractor.
 2. They shall be run "single layer" with their outside surface no closer than 1" to any surface of the structural concrete.
 3. They shall not be located in any configuration which places the outside surface of one closer than 3" to outside surface of another, except at tees, crosses or other single level wide angle junction points.
 4. Where crossovers or close grouping are unavoidable, circuitry shall be carefully field coordinated so as not to cause structural weakness.
 5. Where turned up or down into a wall or partition they shall, before entering same, be routed parallel for a long enough distance to assure that no relocation of the wall or partition will be necessary to conceal the required bend.
 6. They shall be routed in such a manner as to coordinate with the structural requirements of the building.
 7. They shall be routed in accordance with field instructions issued by the Architect where such instructions differ from Specifications set forth herein.
- D. Circuitry run exposed shall be routed parallel to building walls and column lines.
- E. Exposed circuitry located overhead shall be run in a completely accessible manner on the underside of all piping and ductwork.
- F. Circuitry run in suspended ceilings shall be routed parallel to building walls, column lines, etc.
- G. Circuitry shall be routed so as to prevent electric conductors from being subject to high ambient

temperature. Minimum clearances from heated lines or surfaces shall be maintained as follows:

1. Crossing where uninsulated: 3”.
 2. Crossing where insulated: 1”
 3. Running parallel where uninsulated: 36”.
 4. Running parallel where insulated: 6”.
- H. Circuitry shall not be run in elevator shafts, hoistways, and the like. Where outlets for trail cables, pit lights, run be level lights, and the like, are involved, only the “final connection” outlet boxes themselves shall be located within or open into, the confines of the shaft.
- I. Circuitry for miscellaneous systems indicated without notation as to location and routing shall be run as per the requirements and notations governing the adjacent light and power circuitry.

3.6 INSTALLING CIRCUITRY

- A. The outside surface of circuitry, which is to be embedded in cinder concrete, shall be coated with asphaltum paint.
- B. In runs of conduit or raceway including flexible limit the number of bends between cable access points to a total which does not exceed the maximum specified for the particular system. Where no such maximum is specified, limit the number to four (4) right angle bends or the equivalent thereof.
- C. In each conduit or raceway assigned for the future pulling in of wires, include a nylon drag cord. In raceways 2” trade size and larger, the cord shall be pulled in utilizing a suitable brush, followed by an 85% diameter ball mandrel ahead of the cord in the pulling assembly. In the event that obstructions are encountered, which will not permit the drag cord to be installed, the blocked section of raceway shall be replaced and any cutting and patching of the structure involved in such replacement shall be included as part of the electric work.
- D. Circuitry shall be arranged such that conductors of one feeder or circuitry carrying “going” current are not separated from conductors of the same feeder or circuitry carrying “return” current by any ferrous or other metal. Where not within raceways, all “going” and “return” current conductors of one feeder or circuit shall be laced together so as to minimize induction heating of adjacent metal components.
- E. Sleeves used where circuitry is to penetrate waterproof slabs, decks and walls, shall be of a type selected to suit the water condition encountered in the field.

3.7 PROJECT CLOSEOUT

- A. Provide close out submittals as required herein and in SECTION 017800- PROJECT CLOSEOUT including the following close out submittals.
1. Operation and Maintenance Manuals:
 2. Record Drawings.

3. Test Reports.
 4. Extra Materials.
- B. Obtain written receipts of acceptance close out submittals submitted. Receipts shall specifically detail what is being delivered (description, quantity and specification section) and shall be dated and signed by firm delivering materials and by the Owner's Representative.

End of Section 26 00 00