

PROJECT MANUAL

**Facilities Group Space
Efficiency Study and Renovation**

**University of Rhode Island
210 Flagg Road
Kingston, RI**

August 8, 2024

Tecton Job Number URI-72-IN
URI Job Number KC.G.210F.2022.001

Owner: State of Rhode Island
One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855

In care of: The University of Rhode Island Purchasing Department
10 Tootell Road
Kingston, Rhode Island 02881
401.874.2171

Office of Capital Projects
University of Rhode Island
60 Tootell Road
Attn: Mr. Paul DePace, PE
401.874.2725

The University of Rhode Island Board of Trustees
35 Campus Ave, Green Hall
Kingston, Rhode Island 02881

Design Agent: Tecton Architects, pc
34 Sequassen Street, Suite 200
Hartford, CT 06106
Paul Bacchiocchi
860.990.6990

PROJECT MANUAL

Facilities Group Space Efficiency Study and Renovation

**University of Rhode Island
210 Flagg Road
Kingston, RI**

August 8, 2024

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END OF DOCUMENT

DOCUMENT 00 5200 – AGREEMENT FORM

PART 1 – GENERAL

- 1.1 The Agreement Form to be utilized on this project is AIA Document A101-2017as amended, a copy of which follows this page.

END OF DOCUMENT

 **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, telephone and facsimile numbers, and website)

State of Rhode Island One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855
401.578.8100 (telephone); 401.574.8387 (facsimile)
www.purchasing.ri.gov

acting by and through,

The University of Rhode Island Purchasing Department
10 Tootell Road
Kingston, Rhode Island 02881
401.874.2171 (telephone); 401.874.2306 (facsimile)
<http://web.uri.edu/purchasing/>
and

The University of Rhode Island Board of Trustees
35 Campus Ave, Green Hall
Kingston, Rhode Island 02881

on behalf of the User Agency:

(Name, legal status, address, telephone and facsimile numbers, and website)

The University of Rhode Island
Office of Capital Projects
60 Tootell Road – Sherman Building
Kingston, Rhode Island 02881
401.874.2725 (telephone)

and the Contractor:

(Name, legal status, address, telephone and facsimile numbers, and website)

for the following Project:

(Name, location and detailed description)

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.

The Design Agent:

(Name, legal status, address, telephone and facsimile numbers, and website)

Init.

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User Notes:

(3B9ADA38)

The Owner and Contractor agree as follows.



Init.

/

(Paragraph Deleted)

The Owner and Contractor agree as follows.

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
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- 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 Conditions, Supplementary Conditions (if any), 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. No part of the Work shall be performed by Subcontractors without the Owner's prior written consent.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the later of: (i) the issuance of the Purchase Order by the Owner; and (ii) the (Paragraph Deleted)

date set forth in a notice to proceed issued by the User Agency.

(Paragraphs Deleted)

§ 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.

Init.

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User Notes:

(3B9ADA38)

[] 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. Subject to additions and deductions as provided in the Contract Documents, the Contract Sum shall be: \$_____.

§ 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, are specified in the Bid Proposal Form and are included in the Contract Sum.

(Paragraph Deleted)

(Table Deleted)

§ 4.4 Unit prices, if

any, are specified in the Bid Proposal Form and include all costs, including without limitation, labor, materials, services, regulatory compliance, overhead, and profit necessary for the completion of the Work. Unit prices shall be used for both additions to, and deletions from the Work.

(Table Deleted)

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

.1 In the event that there is one date for Substantial Completion of the Work, the Contractor shall pay the Owner the sum stipulated in this Section 4.5.1 as liquidated damages, and not as a penalty, for each calendar day of delay until the Work is substantially complete: \$_____.

.2 In the event that the Project is scheduled to be completed in phases, and there is more than one date for Substantial Completion of the Work, the Contractor shall pay the Owner an aggregate amount equal to the sums stipulated in this Section 4.5.2 as liquidated damages, and not as a penalty, for each calendar day of delay until the Work for each phase is substantially complete:

Init.

Phase	Liquidated Damages Sum
-------	------------------------

.3 The Owner and the Contractor have reasonably determined the sums set forth in this Section 4.5 to be a fair estimate of the Owner' actual damages which are difficult to ascertain in the event of delay.

§ 4.6 Other:
(Paragraph Deleted)

The Owner shall not be liable to the Contractor or any Subcontractor for claims or damages of any nature caused by or arising out of any delays. The sole remedy against the Owner for delays shall be the allowance of additional time for completion of the Work.

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Design Agent by the Contractor and Certificates for Payment issued by the Design Agent and approved by the Owner in writing, 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.

§ 5.1.3 The Owner shall make payment of the certified amount, less retainage, to the Contractor not later than the 30th working day following written approval by the Owner.

(Paragraph Deleted)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor and approved by the Design Agent and the Owner 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 Design Agent and the Owner 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™–2007, General Conditions of the Contract for Construction as modified by the Owner, 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 Design Agent determines, in the Design Agent'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 Design Agent has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2007 as modified by the Owner;

Init.

- .3 For Work performed or defects discovered since the last payment application, any amount for which the Design Agent may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2007 as modified by the Owner; and
- .4 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: five (5%) percent.

(Paragraph Deleted)

§ 5.1.7.1.1 Deleted.

(Paragraph Deleted)

§ 5.1.7.2 Deleted.

(Paragraph Deleted)

§ 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:

(Paragraph Deleted)

The amount of five (5%) percent shall be retained by the Owner through the date of Substantial Completion of the Work and then after the date of Substantial Completion of the Work in accordance with R.I. Gen. Laws § 37-12-10.1.

§ 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 A201–2007 as modified by the Owner.

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

§ 5.1.10 Within 10 working days of receipt of any progress payment from the Owner, the Contractor must pay its Subcontractors the full amount included for each such Subcontractor within the Contractor’s Application for Payment in accordance with the provisions of AIA A201 – 2007, General Conditions of the Contract for Construction as modified by the Owner.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, less the amount withheld pursuant to § 5.1.7.3, 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 A201–2007 as modified by the Owner, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Design Agent and approved in writing by the Owner;
- .3 the Contractor has submitted its final release and final releases from all of its Subcontractors and suppliers in a form acceptable to the Owner; and
- .4 the Contractor has submitted to the Owner all close-out documents, including without limitation, all as-built plans, warranties, manuals, and other materials set forth in the Contract Documents.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 working days after the issuance of the Design Agent’s final Certificate for Payment and written approval by the Owner.

Init.

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due in accordance with the provisions of “Prompt Payment by Department of Administration,” R.I. Gen. Laws §§ 42-11.1-1 et seq.

§ 5.4 Owner’s Rights

§ 5.4.1 The Owner shall have the right to deduct from any payments due to the Contractor the amount of any unpaid obligations owed to the State of Rhode Island by the Contractor, including without limitation, any and all unpaid taxes, the amount of any claim against the Contractor arising out of this Agreement, or any amount on account of any other reason permitted by applicable law.

§ 5.5 Pursuant to R.I. Gen. Laws § 44-1-6, the Owner shall withhold payment from the Contractor if the Contractor does not maintain a regular place of business in Rhode Island in the amount of three (3%) percent of the Contract Sum until 30 calendar days after Final Completion and compliance by the Contractor with the requirements of such section. The three (3%) percent withheld pursuant to R.I. Gen. Laws § 44-1-6 is not considered retainage which is held pursuant to § 5.1.7.

(Paragraph Deleted)

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

Claims shall be referred to the Initial Decision Maker for initial decision. The University of Rhode Island Vice President for Administration and Finance pursuant to the provisions of the “Delegation of Limited Procurement Authority,” dated January 19, 2018 and the provisions of the “State Purchases Act,” R.I. Gen. Laws § 37-2-1 et seq., will serve as the Initial Decision

Maker in accordance with the provisions of the State Purchases Act, State of Rhode Island Procurement Regulations, and this Section 6.1. An initial decision shall be required as a condition precedent to binding dispute resolution pursuant to Section 6.3 of any Claim arising prior to the date final payment is due.

§ 6.2 Mediation

For any Claim not resolved by the Initial Decision Maker procedures set forth in Section 6.1, and prior to the implementation of the binding dispute resolution procedures set forth in Section 6.3, the Contractor shall *have the*

option to pursue mediation, exercisable by written notice to the Owner within 30 calendar days of an Initial Decision. In the event of the exercise of such option by the Contractor, the Owner and the Contractor shall attempt to select a mediator, and in the event that the Owner and the Contractor cannot agree on a mediator, either party may apply in writing to the Presiding Justice of the Providence County Superior Court, with a copy to the other, with a request for the court to appoint a mediator, and the costs of the mediator shall be borne equally by both parties.

(Paragraph Deleted)

§ 6.3 Binding Dispute Resolution

For any Claim not resolved by the Initial Decision Maker procedures set forth in Section 6.1, or mediation at the option of the Contractor pursuant to Section 6.2, the method of binding dispute resolution shall be determined in accordance with the provisions of the “Public Works Arbitration Act,” R.I. Gen. Laws §§ 37-16-1 et seq.

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 A201–2007, as modified by the Owner. The Contract may also be terminated by the Owner: (i) in the event of the unavailability of appropriated funds; (ii) in the absence of a determination of continued need; or (iii) as *otherwise provided in the State of Rhode Island Procurement Regulations General Conditions of Purchase or other applicable law.*

§ 7.1.1 Deleted.

Init.

§ 7.2 The Work may be suspended by the Owner as provided in: (i) the State of Rhode Island General Conditions of Purchase Regulation or other applicable law; or (ii) Article 14 of AIA Document A201–2007 as modified by the Owner.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to: (i) the AIA Document A201 – 2007 or other Contract Document as modified by the Owner; and (ii) that provision in the AIA Document A201 – 2007 as modified by the Owner or other Contract Document as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Representatives for the Owner

§ 8.2.1 The Owner’s representative:

(Name, title, address, email address, and other information for the preferred methods of contact)

**The University of Rhode Island, Purchasing Department
10 Tootell Road
Kingston, Rhode Island 02881
Paul M. DePace, PE
401.874.2725 (telephone)**

§ 8.2.2 The User Agency’s representative:

(Name, title, address, email address, and other information for the preferred methods of contact)

**The University of Rhode Island
Office of Capital Projects
60 Tootell Road – Sherman Building
Kingston, Rhode Island 02881
Paul M. DePace, PE
401.874.2725 (telephone)**

§ 8.2.3 The Design Agent’s representative:

(Name, title, address, email address, and other information for the preferred methods of contact)

§ 8.3 The Contractor’s representative:

(Name, title, address, email address, and other information for the preferred methods of contact)

§ 8.4 Neither the Owner’s nor the Contractor’s representative nor the Design Agent’s representative shall be changed without 10 working 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 the Solicitation and elsewhere in the Contract Documents.

Init.

§ 8.5.2 The Contractor shall provide bonds as set forth in the Solicitation and elsewhere in the Contract Documents.

§ 8.6 Deleted.

§ 8.7 Other provisions:

§ 8.7.1 The Contractor represents and warrants to the Owner, in addition to any other representations and warranties of the Contractor elsewhere in the Contract Documents:

.1 The Contractor and its Subcontractors are each financially solvent, able to pay their debts as they mature, and possess sufficient working capital to perform their obligations under the Contract Documents.

.2 The Contractor and its Subcontractors are each able to furnish the tools, materials, equipment, and labor required to complete the Project as required under the Contract Documents.

.3 *The Contractor and each Subcontractor are authorized to do business in the State of Rhode Island and are properly licensed by all necessary governmental authorities having jurisdiction over them and over the Work and the Project.*

.4 The execution of this Agreement and its performance is within its duly authorized powers.

.5 The Contractor has visited the site of the Project, familiarized itself with the local and special conditions under which the Work is to be performed, and correlated its observations with the requirements of the Contract Documents.

.6 The Contractor possesses the requisite level of experience and expertise in the business administration, construction, and superintendence of projects of the size, complexity, and nature of the Project, and it will perform the Work with the care, skill, and diligence of a contractor possessing such experience and expertise.

§ 8.7.2 The representations and warranties of the Contractor in this Section 8.7 and elsewhere in the Contract Documents will survive the execution and delivery of this Agreement, any termination of this Agreement, and the final completion of the Work.

§ 8.7.3 Any Change Orders or other Modifications must be approved in writing by the Owner.

§ 8.7.4 The Owner is the State of Rhode Island, acting by and through its Department of Administration, Division of Purchases, and therefore, pursuant to the provisions of R.I. Gen. Laws § 34-28-31, mechanics liens may not be placed against the Project.

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, as modified by the Owner

.2 Deleted.

.3 AIA Document A201™–2007, General Conditions of the Contract for Construction, as modified by the Owner.

.4 Deleted.

.5 Drawings

(Table Deleted)

The Drawings are included in the Solicitation and are available on the Division of Purchases website at www.purchasing.ri.gov.

.6 Specifications

(Table Deleted)

The Specifications are included in the Solicitation and are available on the Division of Purchases website at www.purchasing.ri.gov.

.7 Addenda, if
(Table Deleted)

any, issued pursuant to the Solicitation form a part of the Solicitation and are available on the Division of Purchases website at www.purchasing.ri.gov.

.8
Supplementary and other Conditions of the Contract, including without limitation, the State of Rhode Island General Conditions of Purchase Regulation.

.9 Other documents listed below:

(Paragraph Deleted)

.1 The Solicitation, issued by the Owner, including without limitation, the Invitation to Bid, the Instructions to Bidders, the Specifications and Drawings, any Addenda, and the Bid Checklist.

(Paragraph Deleted)

.2 The Bid Proposal, including without limitation, the Bid Form and the Bidder Certification Cover Form.

(Table Deleted)

.3 The Purchase Order issued by the Owner.

§ 9.2 This Agreement and the Contract Documents are subject to, and governed by, the laws of the State of Rhode Island, including all procurement statutes and regulations (available at www.purchasing.ri.gov), and applicable federal and local law, all of which are fully incorporated into this Agreement by this reference.

(Table Deleted)

(Paragraph Deleted)

§ 9.3 *In the event of any conflict between or among the Contract Documents, or any Contract Documents and any provision of the State of Rhode Island Procurement Regulations and/or any other provision of the Rhode Island General Laws, the State of Rhode Island Procurement Regulations and the Rhode Island General Laws shall control.*

ARTICLE 10 BENEFITS OF AGREEMENT

§ 10.1 The User Agency is a disclosed third-party beneficiary of this Agreement and shall have all of the rights and benefits hereunder to which such a party is entitled. Nothing contained in this Agreement shall create a contractual relationship with, or a cause of action in favor of, any other third party against the Owner or the User Agency.

§ 10.2 This Agreement shall be binding on the Contractor and its successors and assigns; provided, however, that the Contractor may not assign its rights nor delegate its responsibilities under this Agreement without the Owner's prior written consent.

Init.

This Agreement is entered into as of the day and year first written above; provided, however, that this Agreement shall not become a valid, binding, and enforceable contract unless and until the Owner shall have issued a Purchase Order.

**THE STATE OF RHODE ISLAND, acting by
and through THE UNIVERSITY OF RHODE
ISLAND PURCHASING DEPARTMENT and
THE UNIVERSITY OF RHODE ISLAND
BOARD OF TRUSTEES**

OWNER *(Signature)*

Abigail Rider Vice President, Division of
Administration and Finance, University of Rhode
Island

(Printed name and title)

CONTRACTOR *(Signature)*

(Printed name and title)

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DOCUMENT 00 6140 - WAIVER OF LIEN FORM

U. R. I. Document 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

August 8, 2024

**WAIVER OF LIENFORM
00 6140-1**

UNIVERSITY OF RHODE ISLAND

Construction Project Title: _____

General Contractor: _____

Subcontractor/Supplier: _____

DUNS No.: _____

Application and Certificate for Payment No: _____
(prior to Application accompanying this form)

Schedule of Values Line Item No.: _____

DESCRIPTION OF WORK Heading: _____

Total payment Received, Including Current Payment: \$ _____

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 Application and Certificate for Payment.

Signed on this _____ day of _____, 20__.

(signature)

(firm name)

END OF DOCUMENT

DOCUMENT 00 7000 – GENERAL CONDITIONS

PART 1 – GENERAL

- 1.1 The General Conditions to be utilized on this project is AIA Document A201-2007 as amended, a copy of which follows this page.

END OF DOCUMENT



AIA Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

THE OWNER:

(Name, legal status and address)

State of Rhode Island
One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855
(401) 574-8100 (telephone)
(401) 574-8387 (facsimile)

(Paragraphs deleted)

acting by and through

(Paragraphs deleted)

The University of Rhode Island Purchasing Department

(Paragraphs deleted)

10 Tootell Road
Kingston, Rhode Island 02881
(401) 874-2171 (telephone)
(401) 874-2306 (facsimile)

<http://web.uri.edu/purchasing/>

(Paragraph deleted)

and

(Paragraphs deleted)

The University of Rhode Island Board of Trustees
35 Campus Avenue, Green Hall
Kingston, Rhode Island, 02881

(Paragraphs deleted)

On behalf of the User Agency

THE USER AGENCY

(Paragraphs deleted)

(Name, address, telephone and facsimile numbers, and web address)

(Paragraphs deleted)

The University of Rhode Island

(Paragraphs deleted)

Office of Capital Projects
60 Tootell Road – Sherman Building
Kingston, Rhode Island 02881
(401) 874-2725 (telephone)

(Paragraphs deleted)

THE Design Agent:

(Paragraphs deleted)

(Name, legal status, address, telephone and facsimile numbers, and web address)

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.

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TABLE OF ARTICLES

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3 CONTRACTOR

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5 SUBCONTRACTORS

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7 CHANGES IN THE WORK

8 TIME

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9 PAYMENTS AND COMPLETION

(Paragraphs deleted)

10 PROTECTION OF PERSONS AND PROPERTY

(Paragraph deleted)

11 INSURANCE AND BONDS

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(Paragraphs deleted)

13 MISCELLANEOUS PROVISIONS

(Paragraphs deleted)

14 TERMINATION OR SUSPENSION OF THE CONTRACT

(Paragraphs deleted)

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(Paragraphs deleted)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (the Agreement) and consist of the Agreement (and the documents enumerated therein), Conditions of the Contract (General Conditions, Supplementary Conditions, if any, 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 Design Agent.

§ 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 Design Agent or the Design Agent's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Design Agent or the Design Agent's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Design Agent shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Design Agent'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 Design Agent and the Design Agent'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 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items and services necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; the Contractor shall perform all work reasonably inferable from the Contract Documents as being necessary to produce the indicated results.

§ 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.

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§ 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 In the event of any conflicts or discrepancies among the Contract Documents, the provisions of the Contract Documents will be interpreted in the order of priority set forth in Rhode Island Procurement Regulation 220-RICR-30-00-13.4(B).

§ 1.2.5 In the event of any conflicts or discrepancies between the Contract Documents and the State of Rhode Island Procurement Regulations or any provision of the Rhode Island General Laws, the State of Rhode Island Procurement Regulations and the Rhode Island General Laws will control.

§ 1.2.6 In the event of any inconsistency between the Drawings and Specifications, the better quality or greater quantity of Work shall be provided.

§ 1.2.7 The Owner will be the final decision maker for any and all interpretations.

§ 1.3 CAPITALIZATION

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

§ 1.4 INTERPRETATION

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

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Owner and the User Agency shall have a perpetual license to utilize the Drawings, Specifications, and other documents, including electronic or digital documents, prepared by the Design Agent and the Design Agent's consultants, for the execution of the Project and shall have and retain all rights to use them and reproduce them for the production and maintenance of the Work described therein. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Design Agent's or Design Agent's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them 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 material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Design Agent and the Design Agent's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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 Design Agent does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 Deleted.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Deleted.

§ 2.2.2 The Contractor shall secure and pay for permits and fees, necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

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

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

§ 2.2.5 Deleted.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

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

§ 2.4 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 10 working-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Design Agent's additional services made necessary by such default, neglect, or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Design Agent. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

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. 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 obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Design Agent, or by tests, inspections, or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

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

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Owner and the Design Agent any errors, inconsistencies, or omissions discovered by or made known to the Contractor or additional Drawings, Specifications, or instructions required to define the Work in greater detail to permit the proper progress of the Work as a request for information in such form as the Design Agent may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

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

§ 3.2.3.1 Omissions from the Drawings and Specifications of items obviously needed to perform the Work properly, such as attachments, bolts, hangers, and other fastening devices, shall not relieve the Contractor from the obligation to furnish and install such items.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Design Agent 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 make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2, 3.2.3, or 3.2.3.1, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Design Agent for damages resulting from errors, inconsistencies, or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.4.1 The Contractor shall not make any changes without prior written authorization from the Design Agent and the Owner.

§ 3.2.5 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Design Agent for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Design Agent and shall not proceed with that portion of the Work without further written instructions from the Design Agent. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

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

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§ 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. Whenever the Contractor has an obligation to provide labor and materials under the Agreement, the Contractor, at a minimum, shall provide the labor for, and furnish and install and place in operation all items, including without limitation, all proper connections.

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

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

§ 3.5 WARRANTY

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

§ 3.6 TAXES

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

§ 3.6.2 The State of Rhode Island is exempt from payment of any federal or state excise, transportation, or sales tax. The Rhode Island Department of Administration Division of Purchases will furnish Exemption Certificates upon request.

§ 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 required by the Rhode Island State Building Code 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 Contractor shall be responsible for obtaining the Certificate of Occupancy from the appropriate governmental authorities.

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

§ 3.7.3 The Contractor shall promptly notify the Design Agent and the Owner if the Contractor becomes aware that the Contract Documents are not in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Design Agent before conditions are disturbed and in no event later than 21 working days after first observance of the conditions. The Design Agent will promptly investigate such conditions and, if the Design Agent determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Design Agent determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Design Agent shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Design Agent's determination or recommendation, that party may proceed as provided in Article 15.

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

§ 3.8 ALLOWANCES

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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

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

§ 3.9 SUPERINTENDENT

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

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Design Agent the name and qualifications of a proposed superintendent. The Design Agent may reply within 14 working days to the Contractor in writing stating (1) whether the Owner or the Design Agent has reasonable objection to the proposed superintendent or (2) that the Design Agent requires additional time to review. Failure of the Design Agent to reply within the 14 working-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 Design Agent has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, within 20 working days after the issuance of the Purchase Order, shall prepare and submit for the Owner's and Design Agent's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals, not less frequently than monthly, as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Contractor shall certify on the initial schedule and all revised schedules that they comply with the Contract Documents.

§ 3.10.2 The Contractor shall prepare a submittal schedule, within 20 working days after the issuance of the Purchase Order, and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Owner's and the Design Agent's approval. The Owner's and the Design Agent's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Owner and the Design Agent reasonable time to review submittals. If the Contractor fails to submit a 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 Design Agent.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Design Agent and shall be delivered to the Design Agent 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 the way by which 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 Design Agent is subject to the limitations of Section 4.2.7. Informational submittals upon which the Design Agent 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 Design Agent without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Design Agent Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Owner and the Design Agent 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 Design Agent that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

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

§ 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 requirements of the Contract Documents by the Design Agent's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Design Agent in writing of such deviation at the time of submittal and (1) the Design Agent 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 Design Agent'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 Design Agent on previous submittals. In the absence of such written notice, the Design Agent'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. 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 Design Agent will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly 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 Design Agent. The Owner and the Design Agent shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Design Agent have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Design Agent will review, 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. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.12.11 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Design Agent for evaluation of resubmittals.

§ 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, and lawful orders of public authorities, and any restrictions imposed by the User Agency or the Owner, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and 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 such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's 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 or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

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

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Design Agent 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 Design Agent harmless from loss on account thereof, but shall not be responsible for such 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 Design Agent. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Design Agent and the Owner.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, the User Agency and the State of Rhode Island in accordance with Rhode Island Procurement Regulation 220-RICR-30-00-13.21.

§ 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 Without limiting the generality of the foregoing, the defense and indemnity set forth in this Section 3.18 includes, without limitation, all liabilities, damages, losses, claims, demands, and actions on account of bodily injury, death, or property loss to a person or entity indemnified hereunder or any other persons or entities, whether based upon statutory (including, without limitation, workers compensation), contractual, tort, or other liability of any person or entity so indemnified.

§ 3.18.4 The remedies set forth herein shall not deprive any person indemnified hereunder of any other indemnity action, right, or remedy otherwise available to any such person or entity at common law or otherwise.

§ 3.18.5 The Contractor will include the indemnity set forth in this Section 3.18, without modification, in each Subcontract with any Subcontractor.

§ 3.18.6 Notwithstanding any other language in the Contract Documents to the contrary, the indemnity hereunder shall survive Final Completion of the Work and final payment under the Agreement and shall survive any termination of the Agreement.

ARTICLE 4 DESIGN AGENT

§ 4.1 GENERAL

§ 4.1.1 The Design Agent is the person lawfully licensed to practice his or her profession in the State of Rhode Island or an entity lawfully practicing its profession in the State of Rhode Island and identified in the Contract Documents as the Design Agent. The term "Design Agent" means the Design Agent or the Design Agent's authorized representative.

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

§ 4.1.3 If the employment of the Design Agent is terminated, the Owner shall employ a successor Design Agent as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Design Agent.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Owner with assistance from the Design Agent will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction through the date the Design Agent issues the final Certificate for Payment and continuing until the expiration of the one-year period following Final Completion. The Design Agent will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Design Agent 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 Design Agent will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Design Agent 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, except as provided in Section 3.3.1.

§ 4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Design Agent for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

§ 4.2.3 On the basis of the site visits, the Design Agent will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Design Agent will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Design Agent 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 FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Design Agent about matters arising out of or relating to the Contract. Communications by and with the Design Agent's consultants shall be through the Design Agent. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

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

§ 4.2.6 The Design Agent has authority to reject Work that does not conform to the Contract Documents. Whenever the Design Agent considers it necessary or advisable, the Design Agent will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Design Agent 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 Design Agent to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Design Agent 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 Design Agent's action will be taken in accordance with the submittal schedule approved by the Design Agent or, in the absence of an approved

submittal schedule, with reasonable promptness while allowing sufficient time in the Design Agent'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 Design Agent'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 Design Agent's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Design Agent, of any construction means, methods, techniques, sequences or procedures. The Design Agent's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

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

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

§ 4.2.10 If the Owner and Design Agent agree, the Design Agent will provide one or more project representatives to assist in carrying out the Design Agent's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Design Agent will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Design Agent'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 Design Agent will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Design Agent will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Design Agent's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents and approved by the Owner.

§ 4.2.14 The Design Agent will review and respond to requests for information about the Contract Documents. The Design Agent's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Design Agent 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 subcontractors of a separate contractor.

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

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner and the Design Agent the names of

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persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each portion of the Work. The Owner may reply within 14 working days to the Contractor in writing stating (1) whether the Owner or the Design Agent has reasonable objection to any such proposed person or entity or (2) that the Owner or Design Agent requires additional time for review.

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

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

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

§ 5.2.5 MANUFACTURERS AND FABRICATORS

§ 5.2.5.1 Not later than 10 working days after the date of commencement of the Work, the Contractor shall furnish in writing to the Owner and the Design Agent the names of the manufacturers or fabricators for certain products, equipment, and systems identified in the Specifications and, where applicable, the name of the installing Subcontractor. The Owner may reply within 14 working days to the Contractor in writing, stating: (i) whether the Owner or the Design Agent has reasonable objection to any such proposed person manufacturer or fabricator; or (ii) whether the Owner or Design Agent requires additional time to review.

§ 5.2.5.2 The Contractor shall not contract with a proposed manufacturer, fabricator, or Subcontractor to whom the Owner or Design Agent has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.5.3 If the Owner or Design Agent has an objection to a manufacturer, fabricator, or Subcontractor proposed by the Contractor, the Contractor shall propose another to whom the Owner or Design Agent has no objection.

§ 5.2.5.4 The Contractor shall not substitute a manufacturer, fabricator, or Subcontractor previously selected if the Owner or Design Agent 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, which the Contractor, by these Documents, assumes toward the Owner and Design Agent. Upon the request of the User Agency and/or the Owner, the Contractor shall provide the User Agency and/or the Owner with copies of each subcontract agreement. Each subcontract agreement shall preserve and protect the rights of the Owner and Design Agent under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

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

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

(Paragraph deleted)

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

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, 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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation.

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

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

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

§ 6.2 MUTUAL RESPONSIBILITY

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

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Design Agent apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report 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, except as to defects not then reasonably discoverable.

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

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

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

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and 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 between the Owner and the Contractor; a Construction Change Directive requires agreement by the Owner 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 Design Agent alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, 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 Contractor and signed by the Owner, Contractor and Design Agent stating their agreement upon all of the following:

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

§ 7.2.2 Subsequent to the approval of a Change Order as provided in § 7.1.2, whether such Change Order changes the Contract Sum or Contract Time or both, no additional claim related to such Change Order will be considered by the Owner. Any change, once incorporated into a Change Order, is all inclusive, and includes all factors that could have been considered at the time of the Change Order such as Project impact or schedule "ripple" effect.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

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

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

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

- .1Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4As provided in Section 7.3.7.

§ 7.3.4 Deleted.

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§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Design Agent 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.

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

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Design Agent shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in Section 7.3.1. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Design Agent may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of delivery;
- .3 Rental costs of machinery and equipment, exclusive of hand tools; or
- .4 Costs of premiums for all bonds and insurance and permit fees related to the Work..

§ 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 Design Agent. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Design Agent will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Design Agent determines, in the Design Agent's professional judgment, to be reasonably justified. The Design Agent'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 Design Agent 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 Contractor will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.3.11 The combined overhead and profit included in the total cost to the Owner for a change in the Work shall be based on the following schedule:

- .1 For the Contractor, for work performed by the Contractor's own forces, an amount not to exceed ten (10%) percent of the cost.
- .2 For the Contractor, for work performed by the Contractor's Subcontractors, an amount not to exceed five (5%) of the amount due to the Subcontractors.
- .3 For each Subcontractor, for work performed by the Subcontractor's own forces, an amount not to exceed ten (10%) percent of the cost.
- .4 Where the Work represents both additions and deletions and results in a net increase, the allowable overhead and profit shall be in accordance with this Section 7.3.11, but in no event shall the amount exceed fifteen (15%) percent of the net increase in the cost of the Work.

§ 7.3.12 All proposals with an aggregate cost equal to or in excess of \$500.00 shall be accompanied by a detailed itemization of costs, including labor, materials (quantities and prices), and Subcontracts, in a form acceptable to the Owner. In no event will a change order request reflecting an aggregate cost equal to or in excess of \$500.00 be approved without such itemization.

§ 7.4 MINOR CHANGES IN THE WORK

The Design Agent with the prior written approval of the Owner has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be affected by written order signed by the Design Agent and shall be binding on the Owner and Contractor.

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.

The date of commencement of the Work is the date established in Section 3.1 of the Agreement.

(Paragraph deleted)

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

§ 8.1.4 Deleted.

§ 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 except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

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

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Design Agent, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, then the Contract Time shall be extended by Change Order for such reasonable time as the Owner may determine.

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

(Paragraph deleted)

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

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

§ 9.2 SCHEDULE OF VALUES

Within 20 working days of the issuance of the Purchase Order, and promptly if revision is necessary from time to time as a result of a Change Order, the Contractor shall submit to the Owner, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Design Agent and the Owner may require. This schedule, if and when approved by the Design Agent and the Owner in writing, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least 10 working days before the date established for each progress payment, the Contractor shall submit to the Design Agent and the Owner for approval an itemized Application for Payment prepared in accordance with the schedule of values for completed portions of the Work. Such application shall be notarized, if required, and supported

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by such data substantiating the Contractor's right to payment as the Owner or the Design Agent may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 All Applications for Payment for Change Orders must be accompanied by a Notice of Change in Purchase Order issued by the Owner, and if directed by the Owner, by the User Agency.

§ 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 material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 The form of Application for Payment shall be AIA Document G702, Application and Certification for Payment, supported by AIA Document G702A, Continuation Sheet.

§ 9.3.1.4 Until Substantial Completion, the Owner shall pay ninety-five (95%) percent of the amount due the Contract on account of progress payments.

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

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work. The Contractor shall immediately satisfy any lien, claim, or encumbrance against the site where the Project is located and indemnify the Owner from and against all resulting costs and expenses, including without limitation, attorneys' fees.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Design Agent will, within 7 working days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Design Agent determines is properly due, or notify the Contractor and Owner in writing of the Design Agent's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Design Agent to the Owner, based on the Design Agent's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. 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 Design Agent. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Design Agent 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 material 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.

§ 9.4.3 The Contractor must submit all product literature, material and color samples with each Application for Payment, or as otherwise required by the Owner.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Design Agent will withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Design Agent's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Design Agent is unable to certify payment in the amount of the Application, the Design Agent will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Design Agent cannot agree on a revised amount, the Design Agent will promptly issue a Certificate for Payment for the amount for which the Design Agent is able to make such representations to the Owner. The Design Agent 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 Design Agent'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 for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- .7 failure to carry out the Work in accordance with the Contract Documents; or
- .8 any other failure to comply with the obligations of the Contractor under the Contract Documents.

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

§ 9.5.3 The Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers 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 Design Agent and the Design Agent will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

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

§ 9.6.2 The Contractor shall pay each Subcontractor no later than 10 working 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 Design Agent 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 Design Agent 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 material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within 7 working days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. The Owner shall have the right to withhold payment(s) to the Contractor in the event that any Subcontractors or material and equipment suppliers have not been properly paid. Neither the Owner nor Design Agent shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

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

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

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

§ 9.7 FAILURE OF PAYMENT

If the Design Agent does not issue a Certificate for Payment, through no fault of the Contractor, within 7 working days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within 7 working days after the date established in the Contract Documents the amount certified by the Design Agent or awarded by binding dispute resolution, then the Contractor may, upon 7 additional working days' written notice to the Owner and Design Agent, make a claim for payment as provided under the provisions of applicable law.

§ 9.8 SUBSTANTIAL COMPLETION

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

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

§ 9.8.3 Upon receipt of the Contractor's list, the Design Agent will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Design Agent'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 Design Agent. In such case, the Contractor shall then submit a request for another inspection by the Design Agent to determine Substantial Completion. The Design Agent will perform no more than 2 inspections to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Design Agent for any additional inspections.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Design Agent will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment less the amount of five (5%) percent to be retained by the Owner in accordance with R.I. Gen. Laws § 37-12-10.1. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments,

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retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Design Agent as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Design Agent.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Design Agent 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 written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Design Agent will promptly make such inspection and, when the Design Agent finds the Work acceptable under the Contract Documents and the Contract fully performed, the Design Agent will promptly issue a final Certificate for Payment stating that to the best of the Design Agent's knowledge, information and belief, and on the basis of the Design Agent's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of 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 Design Agent'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. The Design Agent will perform no more than 2 inspections to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Design Agent for any additional inspections.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Design Agent (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 and will not be canceled or allowed to expire until at least 30 working days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, 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, and (6) all other close-out documents required by the Owner, including without limitation, all as-built plans, warranties, manuals, and other materials set forth in the Contract Documents. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

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

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:
.1liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;

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- .2failure of the Work to comply with the requirements of the Contract Documents;
- .3terms of special warranties required by the Contract Documents; or
- .4claims permitted under the State of Rhode Island General Conditions of Purchase Regulation.

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

§ 9.11 The Contractor and the Contractor's surety shall be liable for and shall pay the Owner as liquidated damages the sums specified in the Solicitation and Bid Form, or if completed, the amount set forth in Section 3.4 of the Agreement.

§ 9.12 Warranties required by the Contract Documents shall commence on the date of Final Completion of the Work.

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:

- .1employees on the Work and other persons who may be affected thereby;
- .2the 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 or the Contractor's Subcontractors or Sub-subcontractors; and
- .3other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

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

§ 10.2.3 The Contractor shall 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 owners and users of adjacent sites and utilities.

§ 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 and in consultation with the appropriate governmental authorities.

§ 10.2.4.1 When use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall give the User Agency and the Owner reasonable advance notice.

§ 10.2.4.2 If the Contract Documents require the Contractor to handle materials or substances that under certain circumstances may be designated as hazardous, the Contractor shall handle such materials in an appropriate manner.

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

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§ 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 Design Agent.

§ 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, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

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

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

§ 10.3.3 To the extent permitted by the provisions of R.I. Gen. Laws §§ 9-31-1 et seq., the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Design Agent, Design Agent's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

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

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

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

§ 10.4 EMERGENCIES

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S 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 is specified in the Solicitation and 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.

§ 11.1.1.2 The Contractor's liability insurance shall include all major coverages and be on a comprehensive general liability basis.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance as specified in the Solicitation and as otherwise acceptable to the Owner shall be filed with the Owner and the User Agency 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 working days' prior written notice has been given to the Owner and the User Agency. 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.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the User Agency, and their elected and appointed officials, members, employees, and agents, the Design Agent and the Design Agent's consultants as additional insureds for claims caused in whole or in part by the Contractor's acts or omissions during the Contractor's operations; and (2) the Owner, the User Agency, and their

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elected and appointed officials, members, employees, and agents, as additional insureds 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 The Contractor shall be responsible for the prompt payment to the Owner of any deductible amounts under any insurance policies required under the Contract Documents for claims made pursuant to such policies.

§ 11.2 OWNER'S LIABILITY INSURANCE.

§ 11.2.1 The Contractor shall furnish the Owner and the User Agency, through the Design Agent, an insurance certificate providing Owner's Protective Liability extended to include the interests of the Design Agent, and to protect the Owner, User Agency, and Design Agent from any liability which might be incurred against any of them as a result of any operation of the Contractor or Subcontractors or their employees or anyone for whom either the Contractor or Subcontractors are responsible. Such insurance shall be written for the same limits as the Contractor's commercial general liability insurance and shall include the same coverage.

§ 11.2.2 If the Owner engages separate contractors to perform work for, or in or around, the Project, it shall require in its contracts with each separate contractor that Contractor and its officers, directors, partners, members, employees, and agents shall be: (i) named as additional insureds on a primary, noncontributory basis to any commercial general liability, pollution liability, and excess liability insurance policies; and (ii) provided a waiver of subrogation on all workers compensation and professional liability insurance policies.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 The Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the state of Rhode Island, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the User Agency, the Contractor, Subcontractors and Sub-subcontractors in the Project. If the Owner and/or the User Agency incur any damages by failure of the Contractor to maintain such insurance, then the Contractor shall bear all reasonable cost resulting from such failure.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Design Agent's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 Deleted.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 Deleted.

§ 11.3.3 Deleted.

§ 11.3.4 Deleted.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Contractor shall file with the Owner a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 working days' prior written notice has been given to the Owner and the User Agency.

§ 11.3.7 WAIVERS OF SUBROGATION

The Contractor waives all rights against the Owner and the User Agency and any of their subcontractors, sub-subcontractors, agents and employees, and (2) the Design Agent, Design Agent's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Design Agent, Design Agent's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under this property insurance shall be adjusted by the Contractor as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. 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.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Contractor's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Contractor shall deposit in a separate account proceeds so received, which the Contractor shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Contractor as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within 5 working days after occurrence of loss to the Contractor's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in the Solicitation.

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§ 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 Design Agent's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Design Agent, be uncovered for the Design Agent'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 Design Agent has not specifically requested to examine prior to its being covered, the Design Agent may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Design Agent or failing to conform to the requirements of the Contract Documents, whether discovered before or after 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 Design Agent's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Final 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 an 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 written 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 after receipt of notice from the Owner or Design Agent, the Owner may correct it in accordance with Section 2.4.

§ 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.

§ 12.2.2.4 Upon request by the Owner and prior to the expiration of one year from the date of Final Completion, the Design Agent will conduct and the Contractor shall attend 2 meetings with the Owner to review the facility operations and performance.

§ 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, whether completed or partially completed, of the Owner or separate contractors 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

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sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

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

§ 13.2 SUCCESSORS AND ASSIGNS

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

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to any executive, legislative, judicial, regulatory, or administrative body of the state, or any political subdivision thereof, including without limitation, any department, division, agency, commission, board, office, bureau, authority, school, water, or fire district, or other agency of Rhode Island state or local government that exercises governmental functions, any other governmental authority, and any quasi-public corporation and/or body corporate and politic. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice, or when received, if manually delivered or transmitted by electronic mail or facsimile to the last such address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 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.

§ 13.4.2 No action or failure to act by the Owner, Design Agent 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 there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 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 Design Agent timely notice of when and where tests and inspections are to be made so that the Design Agent may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Design Agent, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Design Agent 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 Design

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Agent of when and where tests and inspections are to be made so that the Design Agent may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 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 Design Agent's services and expenses shall be at the Contractor's expense.

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

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

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

§ 13.6 INTEREST

No interest shall be due or payable on account of any payment due or unpaid under the Contract Documents except in accordance with the provisions of "Prompt Payment by Department of Administration," R.I. Gen. Laws §§ 42-11.1-1 et seq.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

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

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped; or
- .3 Because the Design Agent 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

§ 14.1.2 Deleted.

§ 14.1.3 If one of the reasons described in Section 14.1.1 exists, the Contractor may, upon 7 working days' written notice to the Owner and Design Agent, terminate the Contract and recover from the Owner payment for Work executed.

§ 14.1.4 If the Work is stopped for a period of 60 calendar days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon 7 additional days' written notice to the Owner and the Design Agent, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor:

- .1 refuses or fails to supply enough properly skilled workers or proper materials;

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- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 disregards or fails to comply with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
- .4 otherwise is guilty of breach of a provision of the Contract Documents; or
- .5 cancels or the Contractor or the Owner receives notice of cancellation or nonrenewal of any insurance required under the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, 7 working days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

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

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

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Design Agent's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

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

§ 14.3.2 The
(Paragraphs deleted) _____

Owner shall not be liable to the Contractor or any Subcontractor for claims or damages of any nature caused by or arising out of any delays. The sole remedy against the Owner for delays shall be the allowance of additional time for completion of the Work in accordance with the provisions of Section 8.3.1.

§ 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 written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

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

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written 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 serviced if delivered in person, by mail, by courier, or by electronic transmission. Claims by either party must be initiated within 21 working days after occurrence of the event giving rise to such Claim or within 21 working days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Design Agent will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

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

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

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

§ 15.1.5.2 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.

§ 15.1.5.3 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

§ 15.1.5.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

§ 15.1.6 The Contractor waives Claims against the Owner for consequential damages arising out of or relating to this

(Paragraphs deleted)

Contract. This waiver includes 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. This waiver is applicable, without limitation, to all consequential damages due to the Contractor's termination in accordance with Article 14. Nothing in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims shall be referred to the Initial Decision Maker for initial decision. The University of Rhode Island Vice President for Administration and Finance appointed pursuant to the provisions of the "Delegation of Limited Procurement Authority," dated January 19, 2018, will serve as the Initial Decision Maker in accordance with the provisions of the "Delegations of Limited Procurement Authority," State Purchases Act, State of Rhode Island Procurement Regulations, and this Section 15.2.1. An initial decision shall be required as a condition precedent to binding dispute resolution pursuant to Section 15.3.1 of any Claim arising prior to the date final payment is due.

§ 15.2.2 Deleted.

§ 15.2.3 Deleted.

§ 15.2.4 Deleted.

§ 15.2.5 Deleted.

§ 15.2.6 Deleted.

§ 15.2.6.1 Deleted.

§ 15.2.7 Deleted.

§ 15.2.8 Deleted.

§ 15.3 MEDIATION

§ 15.3.1 For any Claim not resolved by the Initial Decision Maker procedures set forth in Section 15.2.1, and prior to the implementation of the binding dispute resolution procedures set forth in Section 15.4.1, the Contractor or the Design Agent shall have the option to pursue mediation, exercisable by written notice to the Owner within 30 calendar days of an Initial Decision. In the event of the exercise of such option by the Contractor or the Design Agent, the Owner and the Contractor or the Design Agent shall attempt to select a mediator, and in the event that the Owner and the Contractor or the Design Agent cannot agree on a mediator, either party may apply in writing to the Presiding Justice of the Providence County Superior Court, with a copy to the other, with a request for the court to appoint a mediator, and the costs of the mediator shall be borne equally by both parties.

§ 15.3.2 Deleted.

§ 15.3.3 Deleted.

§ 15.4 BINDING DISPUTE RESOLUTION

§ 15.4.1 For any Claim not resolved by the Initial Decision Maker procedures set forth in Section 15.2.1, or mediation at the option of the Contractor pursuant to Section 15.3.1, the method of binding dispute resolution shall be determined in accordance with the provisions of the "Public Works Arbitration Act," R.I. Gen. Laws §§ 37-16-1 et seq.

(Paragraphs deleted)

§ 15.4.4 Deleted.

§ 15.4.4.1 Deleted.

§ 15.4.4.2 Deleted.

§ 15.4.4.3 Deleted.

§ 16 COMPLIANCE WITH APPLICABLE LAW

The Contractor and its Subcontractors shall comply with all applicable federal, state, and local laws.

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DOCUMENT 00 6140 - WAIVER OF LIEN FORM

U. R. I. Document 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

August 8, 2024

**WAIVER OF LIEN FORM
00 6140-1**

UNIVERSITY OF RHODE ISLAND

Construction Project Title: _____

General Contractor: _____

Subcontractor/Supplier: _____

DUNS No.: _____

Application and Certificate for Payment No: _____
(prior to Application accompanying this form)

Schedule of Values Line Item No.: _____

DESCRIPTION OF WORK Heading: _____

Total payment Received, Including Current Payment: \$ _____

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 Application and Certificate for Payment.

Signed on this _____ day of _____, 20__.

(signature)

(firm name)

END OF DOCUMENT

DOCUMENT 00 7200 – URI STANDARD DOCUMENTS

PART 1 – GENERAL

- 1.1 The latest version of the following documents, available on the URI Capital Projects website, <http://web.uri.edu/capitalprojects/manual-for-construction-project-safety-procedures/>, will apply to all of the work of this project and are hereby incorporated by reference:

- URI Sexual Harassment Policy
- Manual for Construction Project Safety Procedures
- Access Box Keys
- Residential Sprinkler Protection
- Hot Work Permitting
- Fire Protection System Impairment
- Fire Watches
- URI Water System Regulations/Policies
- URI Contractor Attestation Related to COVID-19 Pandemic

END OF DOCUMENT

SECTION 01 1000 - SUMMARY

PART 1 - GENERAL

1.01 PROJECT

- A. See Supplemental General Conditions for official Project Information.
- B. The Project consists of the construction of the following types of work:

- 1. Architectural, plumbing, mechanical and electrical work described below.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5200 - Agreement.

1.03 DESCRIPTION OF WORK

- A. Scope of demolition and removal work is shown on drawings and as specified in Section 02 4119.
- B. Scope of alterations work is shown on drawings and/or as specified herein.
- C. Site modifications: None.
- D. Architectural modifications:
 - 1. Renovate approximately 2,895 square feet of the second floor to create offices for the URI Office of Capital Projects (OCP) with the conversion of Rooms 202, 203, 204 and 205 into the OCP office suite.
 - 2. Renovation of existing Breakroom 213.
- E. Plumbing modifications:
 - 1. Modifications to plumbing systems at Breakroom 213.
- F. Mechanical modifications:
 - 1. Modifications to mechanical systems at work area.
- E. Electrical modifications:
 - 1. Modifications to electrical systems at work area.

1.04 OWNER OCCUPANCY/SCHEDULE

- A. Owner intends to continuously occupy the facility. Work areas will be made available as mutually agreed to during project scheduling. See Attachment A at the end of this section for availability and restrictions on access to spaces.

- B. Work to begin within 7 days of receipt of Purchase Order.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings. Coordinate with Attachment A following this section. Include all costs of this coordination, including all premium time wages that may be required to meet these requirements, in the Base bid.
- B. Arrange use of site and premises to allow:
 - 1. Adjacent projects to progress as planned for the Owner.
 - 2. Use of street and adjacent properties by the Public.
 - 3. Continued operation of the facility in accordance with Attachment A.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Maintain appropriate egress for workforce and users of the facility.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit. Provide necessary signage and barriers to direct pedestrians around work areas.
- D. Time Restrictions:
 - 1. Limit conduct of especially noisy work when events are in process. Night and weekend work is allowed.
 - 2. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
- E. Utility Outages and Shutdown:
 - 1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
 - 2. Prevent accidental disruption of utility services to other facilities.
 - 3. Contractor to provide written notification on Fire Sprinkler and Alarm System Impairment Notification Form following this section as Attachment B.

1.06 ITEMS TO BE SALVAGED

- A. Acoustical panel ceilings for reinstallation.
- B. Doors and frames for reinstallation.
- C. Fire extinguishers and cabinets for return to Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION – NOT USED

END OF MAIN SECTION – See Attachments A, B, and C following.

Attachment A – 01 1010

NOTE:

Unrestricted = Contractor to plan and schedule work and submit for review by Owner

Limited Restriction = Contractor to meet with Owner and coordinate access to these areas

Restricted = Contractor to perform work on dates provided in this document

GENERAL NOTES:

The Contractor will be responsible for providing protection for all furniture and belongings in each office. The Contractor is also responsible for cleaning their work areas after each shift so that they are ready for Owner occupancy the next day.

The Contractor is responsible for maintaining egress paths during construction to the satisfaction of the Fire Marshall and the AHJ.

The building occupants are sensitive to dust issues. The Contractor will be responsible for providing dust containment in each area while it is under construction and then cleaning each contained area daily when the shift is over.

Contractor is responsible for coordinating with the Owner for exterior hoisting, if needed, with respect to timing, crane placement, window removal, temporary openings and restoration, etc, and is responsible for any and all associated costs.

Parking is restricted to areas designated by the University.

Any material not installed during the shift must be removed from occupied areas at the end of each shift.

The Contractor is responsible to protect areas below the roof from water damage in case of rain.

**01 1030 SUMMARY - Attachment C
Abatement Plan**

The asbestos abatement plan following this page has been prepared by the University's consultant and applies to the work areas of this project as noted. The following work has already been accomplished by other subcontractors:

(None)

The following work is to be included as part of this project and shall be included in the Base Bid price:

(None)

SECTION 01 2000 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Allowances.
- B. Testing and inspection allowances.
- C. Schedule of values.
- D. Applications for payment.
- E. Warranty inspection retainage.
- F. Sales tax exemption.
- G. Change procedures.
- H. Defect assessment.
- I. Unit prices.
- J. Alternates.

1.02 ALLOWANCES

- A. See General Conditions Article 3.8 for Allowance provisions.
- B. Design Agent Responsibility:
 - 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 to adjust final cost.
- C. Contractor Responsibility:
 - 1. Assist Design Agent or its Consultants in selection of products, suppliers and installers.
 - 2. Obtain proposals from suppliers and installers, and offer recommendations.
 - 3. On notification on selection by Design Agent, 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.
- D. Schedule of Allowances: See Attachment A.

1.03 TESTING AND INSPECTION ALLOWANCE

- A. All costs of regularly scheduled testing are included in the Base Bid. See Attachment A for allowance to cover costs of additional testing to be provided when directed by the Owner.
- B. See Section 01 4000 and its attachment for testing requirements.

1.04 SCHEDULE OF VALUES

- A. Submit Schedule of Values in duplicate, one copyrighted original and one copy.
- B. 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, insurance and closeout.
- C. Include in each line item, the amount of Allowances specified in this Section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- D. Include separately for each line item, a direct proportional amount of Contractor's overhead and profit.
- E. Revise schedule to list approved Change Orders, with each Application for Payment.

1.05 APPLICATIONS FOR PAYMENT

- A. Submit each application on an original AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet, accompanied by three copies.
 - 1. Prepare a draft version "pencil copy" of each application and distribute via email 5 days prior to due date for review by Design Agent and Owner's representative.
 - 2. After making agreed revisions, individually sign and notarize and emboss with notary's official seal, the original and each of the three copies. Deliver to Owner's representative for further processing and distribution.
 - 3. Applications not including original copyrighted AIA G702, and G703 Forms, will be rejected, and returned for re-submittal.
 - 4. Applications not properly signed and notarized will be rejected, and returned for re-submittal.
 - 5. Applications submitted without the following items described in this section and its attachments will be returned for resubmittal.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Provide one hard copy and one copy in disc form of the updated construction schedule with each Application for Payment submission, prepared per Section 01 3300.

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, Certified Monthly Payroll Records with proper compliance cover sheet for the previous month's pay period. Identify MBE/DBE subcontractors and hours worked in a format acceptable to URI. See Attachment A this section for current State and Federal requirements.
- E. Submit with transmittal letter as specified for Submittals in Section 01 3300.
- F. Beginning with the second Application for Payment, Contractor's right to payment must be substantiated by documenting, on a copy of the URI Waiver of Lien Form included in Document 00 6140 - 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.
- G. Substantiating Data: When the Owner or Design Agent requires additional substantiating information from the review of the "pencil copy", submit data justifying dollar amounts in question.
- H. In addition to the items above, include the following with the Application for Payment :
 1. Record Documents as specified in Section 01 7800, for review by the Owner which will be returned to the Contractor.
 2. Affidavits attesting to off-site stored products with insurance certificates as requested.
 3. Digital Photographs as specified in Section 01 3300. Include on same disc with construction schedule.
- I. Payment Period: Submit at monthly intervals unless stipulated otherwise in the Supplemental General Conditions.

1.06 WARRANTY INSPECTION RETAINAGE

- A. A percentage of job cost as defined in Attachment A will be retained from Final Payment for a duration of ten months. If, after ten months, all systems including mechanical and electrical, are determined by the Owner to be properly functioning, the Warranty Inspection Retainage will be released.
- B. If, after ten months, there are found to be modifications, adjustments, or corrections necessary to be made to address any system or product malfunction, in order to fulfill specified performance or requirements of such systems or products, release of the warranty inspection retainage will be delayed until such malfunctions are rectified.
- C. If, after twelve months from the date of Final Completion, all systems have not been fully addressed, the Owner may utilize the Warranty Inspection Retainage to hire others to execute necessary modifications, adjustments, or corrections.

1.07 SALES TAX EXEMPTION

- A. Owner is exempt from sales tax on products permanently incorporated in Work of the Project.
 - 1. Obtain sales tax exemption certificate number from Owner.
 - 2. Place exemption certificate number on invoice for materials incorporated in the Work of the Project.
 - 3. Furnish copies of invoices to Owner.
 - 4. Upon completion of Work, file a notarized statement with Owner that all purchases made under exemption certificate were entitled to be exempt.
 - 5. Pay legally assessed penalties for improper use of exemption certificate number.

1.08 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 Design Agent 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 Design Agent 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 15 days.
- D. The Contractor may propose changes by submitting a request for change to the Design Agent, 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 6000.
- 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 Design Agent.
- 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 which 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: Design Agent 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, including timeslips signed by Owner's representative, within the time limits indicated in the Conditions of the Contract. The Design Agent will determine the change allowable in the Contract Sum and Contract Time as provided in the Contract Documents. Only Owner-representative-signed timeslips will be considered.
 - I. Maintain detailed records of work done on a Time and Material basis. Submit timeslips daily for verification and sign-off by Owner's representative on-site. 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 Design Agent 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. 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.
 - 2. Promptly enter changes in the Project Record Documents.
- 1.09 DEFECT ASSESSMENT
- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
 - B. If, in the opinion of the Design Agent, it is not practical to remove and replace the Work, the Design Agent 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 Design Agent.
 - D. The defective Work will be partially repaired to the instructions of the Design Agent, and the unit sum will be adjusted to a new sum at the discretion of the Design Agent.
 - E. The individual Specification Sections may modify these options or may identify a specific formula or percentage sum reduction.

- F. The authority of the Design Agent 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.

1.10 UNIT PRICES

- A. See Attachment A.

1.11 ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted Alternates will be identified in the Purchase Order.
- B. Coordinate related work and modify surrounding work as required.
- C. Schedule of Alternates: See Attachment A.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

01 2010 PRICE AND PAYMENT PROCEDURES - Attachment A

A. Allowances

1. Refer to Bid Form for Allowances

B. Testing Allowance

1. None

C. Unit Prices

1. None

D. Alternates

1. None

E. Payroll Reporting

1. Forms for the submission of Certified Payroll Records may be found from the Rhode Island [Prevailing Wage Website](#) in either PDF or Excel formats. These forms must be used on monthly submittals.
2. Identify Apprenticeship hours required under RIGL 37-13-3.1 for all contracts over \$1million in value.
3. A Minority Utilization Report for minority subcontractors must be included. Use the form provided as Attachment B.

E. Warranty Inspection Retainage

1. One-half of one percent of the cost of the Work will be retained from Final Payment for this purpose.

END OF ATTACHMENT

MBE Compliance Office Attachment B – 01 2020
1 Capitol Hill, 2nd Floor
Providence, RI 02908
401-574-8670, 401-574-8387 (fax)

www.mbe.ri.gov (website)

Pursuant to RIGL 37-14.1 as well as the regulations promulgated thereto, the MBE Compliance Office requires that you complete the following table. Please note that these figures will be verified with the MBEs identified. If there are outstanding issues, such as retainage or a dispute, please indicate and attach supporting documentation for same. Also note that copies of invoice and cancelled checks for payment to all MBE subcontractors and suppliers are required.

Contractor/Vendor Name:

Project Name & Location:

Original Prime Contract Amount: \$ _____

Current Prime Contract Amount: _____

MBE/WBE Subcontractor	Original Contract Amount	Change Orders	Revised Contract Value	% Completed To Date	Amount Paid To Date	Amount Due	Retainage %	Retainage Amount	Explanation

I declare, under penalty of perjury, that the information provided in this verification form and supporting documents is true and correct.

Signature

Date

Printed Name

Notary Certificate:

Sworn before me this _____ day of _____, 2022.

Notary Signature

Commission Expires

01 2030 PRICE AND PAYMENT PROCEDURES - Attachment C
Small Project Changes

A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.

B. No amendments are necessary in this Section due to project size. See Attachment A for project specific amendments.

END OF ATTACHMENT

SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Site administration
- B. Coordination and project conditions.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Pre-installation meetings.

1.02 SITE ADMINISTRATION

- A. Maintain a daily attendance log to include the names of all project employees and guests to the site regardless of project size. Each guest signing the log should indicate a brief description of the reason for the visit, the guest's employer or organization. The log sheet, or sheets, must clearly indicate the Project Name, and the name of the Prime contractor. Each line in the log should allow for the name of that employee, the employee's job title (use terminology used by prevailing wage job title), the name of that employee's employer and the employee's contact information. This log shall be kept on a uniform form prescribed by the Director of Labor and Training. Such log shall be available for inspection on the site at all times by the Purchaser, Owner, and/or the Director of the Department of Labor and Training and his or her designee. Provide copies when requested. The log shall comply with requirements of RIGL 37-12-12(c).

1.03 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.
- 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. Coordinate the space requirements, supports and installation of the mechanical and electrical Work, which are indicated diagrammatically on the Drawings. Follow the routing shown for the pipes, ducts, and conduit, as closely as practicable; place runs parallel with the lines of the building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- D. Coordinate the completion and clean up of the Work of the separate Sections in preparation for Substantial Completion and for portions of the Work designated for the Owner's partial occupancy.
- E. After the Owner's occupancy of the premises, coordinate access to the site for correction of defective Work and the Work not in accordance with the Contract Documents to minimize disruption of the Owner's activities.

1.04 PRECONSTRUCTION MEETING

- A. The Design Agent will schedule a meeting after a Purchase Order is issued to the Contractor.
- B. Attendance Required: Owner's Representative, Design Agent, and Contractor.
- C. Agenda:
 - 1. Distribution of the Contract Documents.
 - 2. Submission of a list of Subcontractors, a list of products, schedule of values, and a progress schedule.
 - 3. Designation of the personnel representing the parties in the Contract and the Design Agent.
 - 4. The procedures and processing of the field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout procedures.
 - 5. Scheduling.
- D. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with copies to the Design Agent, Owner, other participants, and those consultants affected by the decisions made.

1.05 SITE MOBILIZATION MEETING

- A. The Design Agent will schedule a meeting at the Project site prior to the Contractor's occupancy and may occur at the same time as the Preconstruction meeting noted above.
- B. Attendance Required: The Owner, Design Agent, 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 partial occupancy.
 - 3. Construction facilities and controls provided by the Owner.
 - 4. Temporary utilities provided by the Owner.
 - 5. Security and housekeeping procedures.
 - 6. Schedules.
 - 7. Application for payment procedures.
 - 8. Procedures for testing.

9. Procedures for maintaining the record documents.
10. Requirements for the start-up of equipment.
11. Inspection and acceptance of the equipment put into service during the construction period.

- D. Contractor shall record the minutes and distribute the copies within two days after the meeting to the participants, with copies to the Design Agent, Owner, other participants, and those consultants affected by the decisions made.

1.06 PROGRESS MEETINGS

- A. Schedule and administer the meetings throughout the progress of the Work at weekly intervals while work is in process.
- 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, Design Agent, and Consultants 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 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. Contractor shall record the minutes and distribute the copies within two days after the meeting to the participants, with copies to the Design Agent, Consultants, Owner, participants, and others affected by the decisions made.

1.07 PREINSTALLATION MEETINGS

- A. When required in the individual specification Sections, convene a pre-installation 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 Design Agent 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 copies to the Design Agent, Owner, participants, and those Consultants affected by the decisions made.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

01 3010 ADMINISTRATIVE REQUIREMENTS - Attachment A

A. Pre-installation Meetings

1. The following items of work will require pre-installation meetings:

08 1213 Hollow Metal Frames
08 1416 Flush Wood Doors
08 3113 Access Doors and Frames
08 7100 Door Hardware
09 2116 Gypsum Board Assemblies
09 5113 Acoustical Panel Ceilings
09 6513 Resilient Base and Accessories
09 6543 Linoleum Flooring
09 6813 Tile Carpeting
09 1000 Painting
12 3530 Residential Casework
12 3661 Simulated Stone Countertops

Fire Protection system
Plumbing systems
Mechanical systems
Electrical systems

END OF ATTACHMENT

01 3020 ADMINISTRATIVE REQUIREMENTS - Attachment B
Small Project Changes

A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.

B. Replace headings 1.01 C, D, E, and F with “C. Meetings”.

C. Delete paragraphs 1.04, 1.05 and 1.07. Retitle 1.06 Progress Meetings to be “1.06 Meetings”. Insert the words “or other requested” after “weekly” in 1.06 A. Delete subparagraph 1.06 D. Agenda. Meeting requirements may be less formal in small projects.

END OF ATTACHMENT

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Product data.
- E. Shop drawings.
- F. Design Data.
- G. Samples.
- H. Test reports.
- I. Certificates.
- J. Manufacturer's instructions.
- K. Manufacturer's field reports.
- L. Digital Photographs.
- M. Erection drawings.
- N. Construction photographs.

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. See Attachment A for initial minimum list on which to base master.
 - 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 Design Agent.

- B. Transmit each submittal with a dated Design Agent-accepted transmittal form.
- C. Transmit printed copies and electronic PDF copy of each submittal to the Design Agent for review and comment as outlined in each section below.
- D. Sequentially number the transmittal form. Mark revised submittals with an original number and a sequential alphabetic suffix.
- E. Identify the Project, Contractor, subcontractor and supplier; the pertinent drawing and detail number, and the specification Section number, appropriate to the submittal.
- F. Apply a Contractor's electronic stamp 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.
- G. Schedule submittals to expedite the Project, and deliver to the Design Agent's FTP site. Coordinate the submission of related items.
- H. For each submittal, allow 15 days for review.
- I. Identify all variations from the Contract Documents and any Product or system limitations which may be detrimental to a successful performance of the completed Work.
- J. Allow space on the submittals for the Contractor's, Design Agent's, and Consultant's electronic review stamps.
- K. When revised for resubmission, identify the changes made since the previous submission.
- L. Distribute copies of the reviewed submittals as appropriate. Reproduce as necessary to inform subcontractors without internet download capabilities. Instruct the parties to promptly report any inability to comply with the Contract requirements.
- M. Produce additional copies as required for the Record Document purposes as described in Section 01 7800.

1.03 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 20 days after Date of Commencement for Design Agent to review. After a review, submit detailed schedules within 15 days modified to accommodate the revisions recommended by the Design Agent and Owner.

- B. Distribute copies of the reviewed schedules to the Project site file, subcontractors, suppliers, and other concerned parties. Instruct the recipients to promptly report, in writing, the problems anticipated by the projections indicated in the schedules
- C. Submit updated schedules with each Application for Payment, identifying changes since previous version as follows:
 - 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.
- D. Submit a computer-generated horizontal bar chart with separate line for each major portion of the Work or operation, identifying the first work day of each week.
- E. 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 duration.
- F. Indicate an estimated percentage of completion for each item of the Work at each submission.
- G. 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 Design Agent. Indicate the decision dates for selection of the finishes.
- H. Indicate the delivery dates for Owner furnished Products, and for Products identified under Allowances.

1.04 PROPOSED PRODUCTS LIST

- A. Within 20 days after the Date of Commencement, 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 PRODUCT DATA

- A. Product Data: Submit to the Design Agent 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 7800.
- B. Submit one (1) printed copy and one (1) electronic PDF copy for review. The Design Agent will retain the reviewed printed copy for record and return the reviewed electronic PDF copy to the Contractor for distribution.
- C. 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.
- D. Indicate the product utility and electrical characteristics, the utility connection requirements, and the location of utility outlets for service for functional equipment and appliances.
- E. After a review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01 7800.

1.06 SHOP DRAWINGS

- A. Shop Drawings: Submit to the Design Agent 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 7800.
- B. Submit two (2) printed copies and one (1) electronic PDF copy for review. The Design Agent and /or Consultants will retain the reviewed printed copies for record and return the reviewed electronic PDF copy to the Contractor for distribution.
- C. Indicate the special utility and electrical characteristics, the utility connection requirements, and the location of utility outlets for service for functional equipments and appliances.

1.07 SAMPLES

- A. Samples: Submit to the Design Agent 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 7800.

- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to the Design Agent for aesthetic, color, or finish selection.
 - 2. Submit samples of the finishes in the colors selected for the Design Agent's records.
 - 3. After review, produce duplicates and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01 7800.

- 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.

- F. Include identification on each sample, with the full Project information.

- G. Submit at least the number of samples specified in the individual specification Sections; the Design Agent will retain two samples.

- H. Reviewed samples, which may be used in the Work, are indicated in the individual specification Sections.

- I. Samples will not be used for testing purposes unless they are specifically stated to be in the specification Section.

1.08 TEST REPORTS

- A. Submit (1) printed and (1) electronic PDF lab reports in accordance with Section 01 4000.

- 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.

1.09 DESIGN DATA

- A. Submit (1) printed and (1) electronic PDF data for the Design Agent's knowledge as contract administrator for the Owner.

- B. Submit information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.10 CERTIFICATES

- A. When specified in the individual specification Sections, submit (1) printed and (1) electronic PDF certification by the manufacturer, installation/application subcontractor, or the Contractor to the Design Agent 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.
- A. Certificates may be recent or previous test results on the material or product, but must be acceptable to the Design Agent and its Consultants.

1.10 MANUFACTURER'S INSTRUCTIONS

- A. When specified in the individual specification Sections, submit (1) printed and (1) electronic PDF copy of instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to the Design Agent 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.

1.11 MANUFACTURER'S FIELD REPORTS

- A. Submit (1) printed and (1) electronic PDF of reports for the Design Agent's benefit as contract administrator for the Owner.
- B. Submit the report within 30 days of observation to the Design Agent for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.12 DIGITAL PHOTOGRAPHS

- A. Submit minimum 12 digital photographs of construction progress each month on the same CD as the project schedule submittal. Include both jpg. and reduced-size PDF versions for email use.
- B. Include an additional minimum of 12 photographs documenting underground utilities when installed in relationship to visible site features.
- C. Include photographs of important in-wall or ceiling utilities before close-in at appropriate stages of construction.
- D. See Section 01 7800 for close-out copy requirements of these files.

1.13 ERECTION DRAWINGS

- A. When specified in the individual Specification sections, the trade contractors shall submit (1) printed and (1) electronic PDF copy of erection drawings for review prior to proceeding with fabrication and/or construction.
- B. Erection drawings shall be prepared in accordance with the latest edition of the respective trades' codes of standard practice.
- C. All erection drawings shall be fully developed by the trade contractors or by agents of the contractors. CAD files, photocopies, or other reproductions of the contract drawings in whole or in part shall not be used by the trade contractors or their agents for the preparation and development of erections drawings without the expressed written consent of the Design Agent.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

01 3310 SUBMITTAL PROCEDURES - Attachment A

A. Submittal List

06 1053	Miscellaneous Rough Carpentry
07 2100	Thermal Insulation
07 8413	Penetration Firestopping
07 9200	Joint Sealants
08 1213	Hollow Metal Frames
08 1416	Flush Wood Doors
08 3113	Access Doors and Frames
08 7100	Door Hardware
08 8000	Glazing
09 2116	Gypsum Board Assemblies
09 5113	Acoustical Panel Ceilings
09 6513	Resilient Base and Accessories
09 6543	Linoleum Flooring
09 6813	Tile Carpeting
09 1000	Painting
12 3530	Residential Casework
12 3661	Simulated Stone Countertops
15 3000	Fire Protection
22 0719	Plumbing Piping Insulation
22 1005	Plumbing Piping
22 4000	Plumbing Fixtures
23 0553	Identification for HVAC Piping and Equipment
23 0593	Testing, Adjusting, and Balancing for HVAC
23 0713	Duct Insulation
23 3100	HVAC Ducts and Casings
23 3300	Air Duct Accessories
26 0000	Electrical

END OF ATTACHMENT

01 3320 SUBMITTAL PROCEDURES - Attachment B

A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.

B. Delete headings 1.01 C, F, L, M, and N. Submittal requirements are reduced for small projects.

C. Replace subparagraph 1.02 A with the following:

“A. Submit all information listed in the Master List provided in Attachment A.”

D. Delete paragraphs 1.12 and 1.13.

END OF ATTACHMENT

SECTION 01 4000 – QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Verification of Credentials and Licenses.
- C. Tolerances
- D. References.
- E. Testing and inspection services.
- F. Manufacturers' field services.
- G. Mock-up Requirements.

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 all manufacturers' instructions and recommendations, including each step in sequence.
- C. When the manufacturers' instructions conflict with the Contract Documents, request a clarification from the Design Agent 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.

1.03 VERIFICATION OF CREDENTIALS AND LICENSES

- A. The Owner has implemented a project management oversight process and is applying it to current construction projects at URI.
- B. An element of this oversight process is the verification that persons employed on the project site have appropriate and current credentials and licenses in their possession, at the project site, for the work they are performing.
- C. Be forewarned that state resident inspectors will be checking for verification of credentials and licenses of both union and non-union persons, in their onsite inspections.
- D. State resident inspectors will also be reviewing Contractor's Certified Monthly Payroll Records for conformance with RI State Prevailing Wage Rate requirements.
- E. Those persons without the appropriate credentials and licenses will be subject to dismissal from the project site.

1.04 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 Design Agent before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.05 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 Design Agent before proceeding.
- E. Neither the contractual relationships, duties, or responsibilities of the parties in the Contract, nor those of the Design Agent, shall be altered from the Contract Documents by mention or inference otherwise in reference documents.

1.06 TESTING AND INSPECTION SERVICES

- A. The Contractor will submit the name of an independent firm to the Design Agent for approval by the Owner, to perform the testing and inspection services. The Contractor shall pay for all the services required in the Base Bid as described in Attachment A. Contractor shall coordinate any Owner-authorized testing also described in Attachment A, to be paid for from Testing Allowance.
- B. The independent firm will perform the tests, inspections and other services specified in the individual specification Sections and as required by the Design Agent or its Consultants.
1. Laboratory: Authorized to operate in the location in which the Project is located.
 2. Laboratory Staff: Maintain a full time registered Engineer on staff to review the services.
 3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either the National Bureau of Standards or to the accepted values of natural physical constants.
- C. Testing, inspections and source quality control may occur on or off the project site. Perform off-site testing as required by the Design Agent or the Owner.
- D. Reports will be submitted by the independent firm to the Design Agent, the Consultant for that trade, and the Contractor, in duplicate, indicating the observations and results of tests and indicating the compliance or non-compliance with Contract Documents.
- E. Cooperate with the independent firm; furnish samples of the materials, design mix, equipment, tools, storage, safe access, and the assistance by incidental labor as requested.
1. Notify the Design Agent and Engineer and the independent firm 24 hours prior to the expected time for operations requiring services.
 2. Make arrangements with the independent firm and pay for additional samples and tests required for the Contractor's use.
- F. Testing and employment of the testing agency or laboratory shall not relieve the Contractor of an obligation to perform the Work in accordance with the requirements of the Contract Documents.
- G. Re-testing or re-inspection required because of a non-conformance to the specified requirements shall be performed by the same independent firm on instructions by the Design Agent or its Consultant. Payment for the re-testing or re-inspection will be charged to the Contractor by deducting the testing charges from the Contract Sum.
- H. Agency Responsibilities:
1. Test samples of mixes submitted by the Contractor.
 2. Provide qualified personnel at the site. Cooperate with the Design Agent or its Consultant and the Contractor in performance of services.
 3. Perform specified sampling and testing of the products in accordance with the specified standards.
 4. Ascertain compliance of the materials and mixes with the requirements of the Contract

Documents.

5. Promptly notify the Design Agent, Consultant and the Contractor of observed irregularities or non-conformance of the Work or products.
 6. Perform additional tests required by the Design Agent or its Consultants.
 7. Attend the preconstruction meetings and the progress meetings.
- I. Agency Reports: After each test, promptly submit two copies of the report to the Design Agent, appropriate Consultant, and to the Contractor. When requested by the Design Agent, provide an interpretation of the test results. Include the following:
1. Date issued.
 2. Project title and number.
 3. Name of inspector.
 4. Date and time of sampling or inspection.
 5. Identification of product and specifications section.
 6. Location in the Project.
 7. Type of inspection or test.
 8. Date of test.
 9. Results of tests.
 10. Conformance with Contract Documents.
- J. Limits On Testing Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on the requirements of the Contract Documents.
 2. Agency or laboratory may not approve or accept any portion of the Work.
 4. Agency or laboratory may not assume any duties of the Contractor.
 5. Agency or laboratory has no authority to stop the Work.

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 Design Agent 30 days in advance of the required observations. Observer is subject to approval of the Design Agent.
- 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 3300 - SUBMITTAL PROCEDURES, MANUFACTURERS' FIELD REPORTS article.

1.09 MOCK-UP REQUIREMENTS

- A. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- B. Accepted mock-ups shall be a comparison standard for the remaining Work.
- C. Where mock-up has been accepted by Design Agent and is no longer needed, remove mock-up and clear area when directed to do so.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not used.

END OF SECTION

01 4010 QUALITY REQUIREMENTS - Attachment A

A. Base Bid Testing Requirements List

1. Penetration firestopping.
2. Testing, adjusting and balancing for HVAC work.

B. Additional Owner-Authorized Testing Requirements List

1. None.

C. Other

1. None.

END OF ATTACHMENT

01 4020 SUBMITTAL PROCEDURES - Attachment B

A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.

B. Delete header 1.01 G. Delete paragraph 1.09. No mock-ups required.

END OF ATTACHMENT

SECTION 01 5000 - 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 cooling.
 - 5. Temporary ventilation.
 - 6. Telephone service.
 - 7. Temporary water service.
 - 8. Temporary sanitary facilities.

- B. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Hoisting.
 - 3. Parking/Traffic.
 - 4. Progress cleaning and waste removal.
 - 5. Project identification.
 - 6. Traffic regulation.

- C. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Security.
 - 4. Fire detection.
 - 5. Water control.
 - 6. Dust control.
 - 7. Erosion and sediment control.
 - 8. Noise control.
 - 9. Pest control.
 - 10. Pollution control.
 - 11. Rodent control.

- D. Removal of utilities, facilities, and controls with reseeding and repair of grounds.

- E. See Attachment A for any modifications.

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. Complement the existing power service capacity and characteristics as required for construction operations.

- C. Provide power outlets, with branch wiring and distribution boxes located at each floor or as required for construction operations. Provide flexible power cords as required for portable construction tools and equipment. All flexible power cords shall be suspended with hangers to eliminate trip hazards.
- D. Provide main service disconnect and over-current protection at a convenient location, or a feeder switch at the source distribution equipment or meter.
- E. Permanent convenience receptacles may not be utilized during construction.
- F. Provide distribution equipment, wiring, and outlets to provide single-phase branch circuits for power. Provide 20-ampere duplex outlets, single-phase circuits for power tools.

1.03 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain incandescent lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft (21 watt/sqm).
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- C. Maintain lighting and provide routine repairs.
- D. Permanent building lighting may be utilized during construction where not removed.

1.04 TEMPORARY HEATING

- A. Existing facilities will be occupied and heated by the University when temperatures require. Take care to avoid leaving doors open in exterior walls that could compromise heating operations. For new construction, the cost of energy will be borne by the Contractor. Provide temporary heating as necessary for construction operations.
- B. Supplement with temporary heat devices if needed to maintain the specified conditions for construction operations even in existing buildings.
- C. Maintain a minimum ambient temperature of 50 degrees F in the areas where construction is in progress, unless indicated otherwise in the product Sections.
- D. In areas of work with mechanical hot-air heating, clean units and replace filters after Substantial Completion.
- E. Do not use new equipment for heating after replacement during construction.

1.05 TEMPORARY COOLING

- A. Existing cooling facilities are typically not available.
- B. Provide and pay for cooling devices and cooling as needed to maintain the specified conditions for construction operations.

- C. Maintain a maximum ambient temperature of 80 degrees F in the areas where construction is in progress, unless indicated otherwise in the specifications.

1.06 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve a curing of materials, to dissipate humidity, and to prevent the accumulation of dust, fumes, vapors, or gases.
- B. If existing ventilation fans are used during construction, clean fans in areas of work after Substantial Completion.

1.07 TELEPHONE SERVICE

- A. Provide, maintain, and pay for cell phone service to the field supervisor at the time of project mobilization and until project Final Completion.

1.08 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.
- B. Extend branch piping with outlets located so that water is available by hoses with threaded connections. Provide temporary pipe insulation if needed to prevent freezing.

1.09 TEMPORARY SANITARY FACILITIES

- A. Contractor shall provide and maintain temporary toilet facilities for use by all construction personnel. Trades people will not be permitted to use existing facilities within the building.

1.10 FIELD OFFICES AND SHEDS

- A. Do not use existing facilities for storage. Job meetings will be held on campus at a location to be chosen by the University.
- B. Storage Areas and Sheds: 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 6000. Containers will be permitted within the project limit line. Coordinate with URI for storage areas.
- C. Preparation: Fill and grade the sites for the temporary structures to provide drainage away from the buildings.
- D. Removal: At the completion of the Work remove the buildings, foundations, utility services, and debris. Restore the areas.

1.11 HOISTING

- A. Contractor is responsible for all hoisting required to facilitate, serve, stock, clean, and complete the Work. Include all costs for Operating Engineers, fuel, delivery and removal, mobilization, staging, protection of grades and surfaces, and equipment.

1.12 PARKING/TRAFFIC

- A. Workers must park in lots assigned by the University with daily permits. See Site Utilization Plan.
- B. Use of designated existing on-site streets and driveways for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.
- C. Do not allow heavy vehicles or construction equipment in parking areas.
- D. Do not allow vehicle parking on existing sidewalks.
- E. Provide and maintain access to fire hydrants and control valves free of obstructions.
- F. Remove mud from construction vehicle wheels before entering streets. Cleanup dirt, rocks, and debris left on street from construction vehicles.
- G. Use designated existing on-site roads for construction traffic.
- H. Maintenance:
 - 1. Maintain the traffic and parking areas in a sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
 - 2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain the paving and drainage in original, or specified, condition.
- I. Removal, Repair:
 - 1. Remove temporary materials and at Substantial Completion.
 - 2. Remove underground work and compacted materials to a depth of 2 feet; fill and grade the site as specified.
 - 3. Repair existing and permanent facilities damaged by use, to the original or specified condition.

1.13 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 debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other remote spaces, prior to enclosing the space.

- C. Broom and vacuum clean the interior areas prior to the start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from the site daily, as necessary to prevent an on-site accumulation of waste material, debris, and rubbish, and dispose off-site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.14 PROJECT IDENTIFICATION

- A. Project Identification Sign: One painted sign, 32 sq ft area, bottom 6 feet above the ground.
 - 1. Content:
 - a. Project title, and name of the Owner as indicated on the Contract Documents.
 - b. Names and titles of the authorities.
 - c. Names and titles of the Design Agent and Consultants.
 - d. Name of the Design Agent Contractor.
 - 2. Graphic Design, Colors, and Style of Lettering: 3 colors, as designated by the Design Agent during construction.
- B. Project Informational Signs:
 - 1. Painted informational signs of same colors and lettering as the Project Identification sign, or standard products; size lettering to provide legibility at 100-foot distance.
 - 2. Provide sign at each field office, storage shed, and directional signs to direct traffic into and within site. Relocate as the Work progress requires.
 - 3. No other signs are allowed without the Owner's permission except those required by law.
- C. Design all signs and their structures to withstand a 60-miles/hr-wind velocity.
- D. Sign Painter: Experienced as a professional sign painter for a minimum of three years.
- E. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for the duration of construction.
- F. Show content, layout, lettering, color, foundation, structure, sizes, and grades of members.
- G. Installation:
 - 1. Install the project identification sign within 15 days after the date of receipt of the Purchase Order from State of Rhode Island Department of Administration, Division of Purchases.
 - 2. Erect at the designated location.
 - 3. Erect the supports and framing on a secure foundation, rigidly braced and framed to resist wind loadings.
 - 4. Install the sign surface plumb and level, with butt joints. Anchor securely.
 - 5. Paint exposed surfaces of the sign, supports, and framing.
- H. Maintenance: Maintain the signs and supports clean, repair deterioration and damage.

- I. Removal: Remove the signs, framing, supports, and foundations at the completion of the Project and restore the area.

1.15 TRAFFIC REGULATION

- A. Signs, Signals, and Devices:
 1. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by local jurisdictions.
 2. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
 3. Flag person Equipment: As required by local jurisdictions.
 4. Police Details: Provide all police details as required by local jurisdictions, including payment directly to officers.
- B. Flag Persons: Provide trained and equipped flag persons to regulate the traffic when construction operations or traffic encroach on the public traffic lanes.
- C. Flares and Lights: Use flares and lights during the hours of low visibility to delineate the traffic lanes and to guide traffic.
- D. Haul Routes:
 1. Consult with the authority having jurisdiction, establish the public thoroughfares to be used for haul routes and site access.
- E. Traffic Signs and Signals:
 1. At approaches to the site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct the construction and affected public traffic.
 2. Install and operate automatic traffic control signals to direct and maintain the orderly flow of traffic in areas under the Contractor's control, and areas affected by the Contractor's operations.
 3. Relocate as the Work progresses, to maintain effective traffic control.
- F. Removal:
 1. Remove equipment and devices when no longer required.
 2. Repair damage caused by installation.
 3. Remove post settings to a depth of 2 feet.

1.16 BARRIERS

- A. Provide barriers to allow for the Owner's use of the site and to protect existing facilities and adjacent properties from damage from the construction operations, or demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way, or for public access to the building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.17 ENCLOSURES AND FENCING

- A. Construction: Provide 6-ft. high commercial grade chain link fence around on-site equipment or areas of site disturbance for the period required to protect work and the public. Equip with vehicular and pedestrian gates with locks. Provide one set of keys to all gates and door locks to the Owner.
- A. Perform adjustment to the proposed layout as may be directed by the Owner.
- B. Interior Enclosures:
 - 1. Provide temporary partitions and ceilings as indicated to separate the work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to the existing materials and equipment.
 - 2. Construction: Framing and reinforced polyethylene, plywood, or gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces, as agreed with the Owner:
 - a. Maximum flame spread rating of 75 in accordance with ASTM E84.

1.18 SECURITY

- A. Security Program:
 - 1. Protect the Work, the existing premises, or the Owner's operations from theft, vandalism, and unauthorized entry.
 - 2. Initiate the program in coordination with the Owner's existing security system at mobilization.
 - 3. Maintain the program throughout the construction period until Owner occupancy of each designated area.
- B. Entry Control: Coordinate the access of the Owner's personnel to the site in coordination with the Owner's security forces.

1.19 FIRE DETECTION

- A. Before beginning any construction operation that can potentially trigger the existing fire alarm detection system, notify the Owner through use of the form provided in Section 01 1020.
- B. Failure to so notify the Owner will subject the Contractor to a monetary fine for each occurrence, should the fire detection system be activated inadvertently by a construction activity.
- C. Comply with FM Global insurance underwriting standards and insurer recommendations for Hot Work, sprinkler impairment, and site maintenance.

1.20 WATER CONTROL

- A. Grade the site to drain. Maintain excavations free of water. Provide, operate, and maintain the pumping equipment.
- B. Protect the site from puddling or running water. Provide water barriers as required to protect the site from soil erosion.

1.21 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.

1.22 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize the amount of bare soil exposed at one time.
- C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- E. Periodically inspect the earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.23 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by the construction operations.

1.24 PEST CONTROL

- A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work, or entering the facility.

1.25 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.

1.26 RODENT CONTROL

- A. Provide methods, means, and facilities to prevent rodents from accessing or invading the premises.

1.27 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials, prior to Substantial Completion.
- B. Remove the underground installations to a minimum depth of 2 feet. Grade the site as indicated.
- C. Clean and repair the damage caused by installation or use of temporary work.
- D. Restore the existing and new facilities used during construction to their original condition.
- E. Restore any temporary exterior laydown or storage areas to the original condition. After each use, regrade and reseed as required to meet this requirement.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

01 5010 TEMPORARY FACILITIES AND CONTROLS - ATTACHMENT A

1.01 SECTION INCLUDES

1. Temporary lighting for construction purposes.
2. Temporary sanitary facilities.

END OF ATTACHMENT

01 5020 TEMPORARY FACILITIES AND CONTROLS - Attachment B

- A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.
- B. Delete all lines 1.01 A.1 thru 8 and B.1 thru 6. Delete paragraph 1.01 C.
- C. Delete 1.02 B, C, D and E. Delete 1.03 A and B. Power distribution work not required.
- D. Delete subparagraphs 1.10 C and D. No field offices temporary utilities anticipated on small projects.
- E. Omitted
- F. Delete subparagraphs 1.12 H and I.
- G. Delete paragraphs 1.14, 1.15, 1.16, 1.17, 1.20, 1.21, 1.22, 1.24, 1.26 and subparagraph 1.27 B, assuming that most small projects do not involve enclosure requirements or exterior/sitework changes.
- H. Add the following new Paragraph 1.28:

1.28 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
1. Construct dustproof partitions with gypsum wallboard, with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
 2. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
 - a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
 3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 4. Insulate partitions to control noise transmission to occupied areas.
 5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 6. Protect air-handling equipment.
 7. Provide walk-off mats at each entrance through temporary partition.

END OF ATTACHMENT

SECTION 01 6000 - 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: Products of one of the manufacturers named and meeting the specifications, no options or substitutions allowed.
- C. 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.

1.06 PRODUCT SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify the time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.
- B. Substitutions may be considered after the bid only in the following circumstances:
 - 1. when a product becomes no longer in production following the date of receipt of the Purchase Order for this Contract. Submit certification both that specified product was carried in Bid, and is no longer obtainable. Provide cost change documentation.
 - 2. there is a significant cost savings offered to the Owner. Provide price comparison of both bid and offered substitution products as well as all collateral costs of the change.

3. Code changes or site conditions require a different item from that bid. Submit as for 2 above.
- C. Document each request with complete data substantiating the compliance of a proposed Substitution with the Contract Documents.
- D. A request constitutes a representation that the Bidder:
1. Has investigated the proposed Product and determined that it meets or exceeds the quality level of the specified product.
 2. Will provide the same warranty for the Substitution as for the specified Product.
 3. Will coordinate the installation and make changes to other Work which may be required for the Work to be complete with no additional cost to the Owner, including redesign.
 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 5. Will reimburse the Owner and the Design Agent for review or redesign services, including those associated with re-approval by the authorities having jurisdiction.
- E. Substitutions will not be considered when they are indicated or 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. Substitution Submittal Procedure, If Permitted Following Contract Award:
1. Submit three copies of a request for Substitution for consideration, no later than 20 working days following date of receipt of the Purchase Order for this Contract. Limit each request to one proposed Substitution.
 2. Submit the Shop Drawings, Product Data, and the certified test results attesting to the proposed product equivalence. The burden of proof is on the proposer.
 3. The Design Agent will notify the Contractor in writing of a decision to accept or reject the request. Costs for review time on unsuccessful requests will be included in the next change order.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

01 6010 PRODUCT REQUIREMENTS - Attachment A

A. *“No variations in this section for this Project.”*

END OF ATTACHMENT

01 6020 PRODUCT REQUIREMENTS - Attachment B

A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.

B. No amendments are necessary in the Section due to project size. See Attachment A for project specific amendments.

END OF ATTACHMENT

SECTION 01 7000 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Examination.
- B. Preparation.
- C. Field Engineering.
- D. Protection of adjacent construction.
- E. Cutting and patching.
- F. Special procedures.
- G. Starting and adjusting of systems.
- H. Demonstration and Instructions.
- I. Testing, adjusting and balancing.
- J. Protecting Installed Construction.

1.02 EXAMINATION

- A. Acceptance of Conditions:
 - 1. Verify that existing applicable site conditions, substrates, or substrate surfaces are acceptable or meet specific requirements of individual specifications Sections, for subsequent Work to proceed.
 - 2. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
 - 3. Examine and verify specific conditions described in individual specifications Sections.
 - 4. Verify that utility services are available, of correct characteristics, and in correct locations.
 - 5. Beginning of new Work, that relies upon the quality and proper execution of 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 next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply substrate primer, sealer, or conditioner, required or recommended by manufacturer, 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 product manufacturers.

1.04 FIELD ENGINEERING

- A. Employ a Land Surveyor registered in the State of Rhode Island and acceptable to Design Agent and the Owner if required by subgrade work.
- B. Locate and protect survey control and reference points. Promptly notify Design Agent of any discrepancies discovered.
- C. Control Datum for survey is to be agreed to with the Design Agent.
- D. Verify setbacks and easements, if any; confirm drawing dimensions and elevations.
- E. Provide field-engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- F. Submit a copy of site drawings and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.
- G. Maintain a complete and accurate log of control and survey work as it progresses.
- H. If required by the Owner, on completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.
- I. Protect survey control points prior to starting site work; preserve permanent reference point during construction.
- J. Promptly report to Design Agent the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- K. Replace dislocated survey control point based on original survey control. Make no changes without prior written notice to Design Agent.

1.05 PROTECTION OF ADJACENT CONSTRUCTION

- A. Protect existing adjacent properties and provide special protection where specified in individual Specification Sections.
- B. Provide protective coverings at wall, projections, jambs, sills, and soffits of existing openings.
- C. Protect existing finished floors, stairs, and other existing surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- D. Cover and protect furnishings, materials and equipment within the spaces receiving new work. Move items as necessary to install new work and return them to original locations at the close of construction in that area.
- E. Repair adjacent properties damaged by construction operations to original condition to the satisfaction of the Owner.
- F. Prohibit unnecessary traffic from existing landscaped areas.
- G. Restore grassed landscaped areas damaged by construction operations to full healthy growth, by installing loam and sod to the requirements, and under the supervision of, the University's Associate Director of Lands and Grounds.

1.06 CUTTING AND PATCHING

- A. Employ skilled and experienced installers to perform cutting and patching.
- B. Submit written request in advance of 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 element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Existing construction, or Work of separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
 - 1. Fit the several parts together, to integrate with 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 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 masonry saw or core drill.
- F. Remove ceiling tiles as necessary to access areas of work. Store and replace carefully to avoid damage. Replace all ceiling tiles damaged during the work with new tiles to match. Repair ACT grid damaged during the work in accordance with this section.
- G. Restore Work with new Products in accordance with requirements of Contract Documents.
- H. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.
- I. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- J. At penetration of fire rated partitions, ceiling, or floor construction, completely seal voids with fire rated or fire resistant material in accordance with Specifications, to full thickness of the penetrated element.
- K. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- L. Identify any hazardous substance or conditions exposed during the Work to the Owner and Design Agent for decision or remedy.
- M. See General Conditions for additional requirements.

1.07 SPECIAL PROCEDURES

- A. Materials: As specified in product Sections; match existing with new products, or salvaged products as appropriate, for patching and extending work.
- B. Employ skilled and experienced installer to perform alteration work.
- C. Cut, move, or remove items as necessary for access to 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 materials as specified for finished Work.
- E. Remove debris and abandoned items from area and from concealed spaces.

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- F. Prepare surface and remove surface finishes to provide installation of new Work and finishes.
- G. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.
- H. Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring products and finishes to original or specified condition.
- I. Refinish existing visible surfaces to remain in renovated rooms and spaces to specified condition for each material, with a neat transition to adjacent finishes.
- J. Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- K. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Design Agent for review.
- L. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition to Design Agent for review.
- M. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
- N. Patch or replace portions of existing surfaces which are damaged, or showing other imperfections.
- O. Finish surfaces as specified in individual product Sections, or as indicated on the Drawings.

1.08 STARTING AND ADJUSTING OF SYSTEMS

- A. Coordinate schedule for starting and adjusting of various equipment and systems.
- B. Notify Design Agent and Owner seven days prior to starting and adjusting of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.
- D. Verify that tests, meter readings and 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 starting and adjusting under supervision of responsible Contractor's personnel or manufacturer's representative, in accordance with manufacturer's instructions.
- G. Adjust operating Products and equipment to ensure smooth and unhindered operation.
- H. When specified in individual specifications Section, require manufacturer to provide authorized representative to be present at the site to inspect, check, and approve equipment or system installation prior to starting, and to supervise placing of equipment or system in operation.
- I. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

1.09 DEMONSTRATION AND INSTRUCTIONS

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

1.10 TESTING, ADJUSTING, AND BALANCING

- A. Submit, for the Owner's approval, the name of an independent firm to perform testing of fire systems. The independent firm's services will be paid for by the Contractor.
- B. The independent firm will perform services specified in individual specifications Sections.
- C. Reports will be submitted by the independent firm to the Design Agent and the Owner indicating observations and test results, indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

1.11 PROTECTING INSTALLED CONSTRUCTION

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

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

01 7010 EXECUTION REQUIREMENTS - Attachment A

A. Daily Attendance Form

1. Maintain Daily Attendance Form acceptable to the Department of Labor and Training for all projects with a contract value over \$1Million. Submit as requested.

END OF ATTACHMENT

01 7020 EXECUTION REQUIREMENTS - Attachment B
Small Project Changes

A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.

B. Delete heading 1.01C, Field Engineering and entire subsection 1.04 FIELD ENGINEERING.

END OF ATTACHMENT

SECTION 01 7320**WASTE MANAGEMENT****PART 1 GENERAL****1.01 WASTE MANAGEMENT REQUIREMENTS**

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood: May be used as blocking or furring.
 - 5. Land clearing debris, including brush, branches, logs, and stumps.
 - 6. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 7. Glass.
 - 8. Gypsum drywall and plaster.
 - 9. Plastic buckets.
 - 10. Paper, including wrapping, newsprint, and office.
- E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports. Submit in accordance with Section 01 3300.
- F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- G. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 5000 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- C. Section 01 6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.
- D. Section 01 7000 - Execution Requirements: Trash/waste prevention procedures related to

demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

- A. See Section 01 3300 for submittal procedures.
- B. Waste Management Plan: Include the following information:
 - 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
 - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
 - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
 - 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.

5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
 6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
- C. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
 2. Submit Report on a form acceptable to Owner.
 3. Landfill Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
 - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 4. Incinerator Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
 - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 5. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.
 - b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
 - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
 6. Material Reused on Project: Include the following information for each:
 - a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards.
 - c. Include weight tickets as evidence of quantity.
 7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 1000 for list of items to be salvaged from the existing building for relocation in project or for Owner.

- B. See Section 01 3000 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- C. See Section 01 5000 for additional requirements related to trash/waste collection and removal facilities and services.
- D. See Section 01 6000 for waste prevention requirements related to delivery, storage, and handling.
- E. See Section 01 7000 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, Owner's Recycling and Solid Waste Coordinator, and Design Agent.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 - 1. Pre-bid meeting.
 - 2. Pre-construction meeting.
 - 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

01 7330 WASTE MANAGEMENT - Attachment A

A. *“No variations in this section for this Project.”*

END OF ATTACHMENT

01 7331 WASTE MANAGEMENT - Attachment B
Small Project Changes

A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.

B. Delete paragraphs 1.01 F and 1.04 B. Change heading at 3.02 to be “WASTE MANAGEMENT PROCEDURES. Delete paragraphs 3.02 A, B and D. No Waste Management Plan will be required.

C. Delete lines 1.04 C.4c, .4d, .5c, .5d and .6c. Required back-up is reduced.

END OF ATTACHMENT

SECTION 01 7800 - CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Closeout procedures.
- B. Quality assurance.
- C. Maintenance service.
- D. Operations and maintenance manuals.
- E. Materials and finishes manuals.
- F. Equipment and systems manuals.
- G. Spare parts and maintenance materials.
- H. Product warranties and product bonds.
- I. Project Record documents.

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 Owner's review.
- B. Provide submittals to Design Agent that are required by governing or other authorities, including abatement invoices correctly prepared as proscribed in the abatement plan. Failure to include correctly prepared abatement invoices will delay issuing of final payment.
- C. Provide submittals to Design Agent 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
 - 2. AIA Document G706A - Contractor's Affidavit of Release of Liens
 - 3. AIA Document G707 - Consent of Surety to Final payment
- D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

- E. The Owner will occupy all portions of the building after Substantial Completion as specified in Section 01 1000.

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 minimum 2 inch size three D side 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. Label each spine with the following: Building, project or facility name, OCP project number, submission date.
- 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 two copies of a preliminary draft of the proposed formats and outline of the contents before the start of work. The Design Agent and its consultants will review drafts and return one copy with comments.

- F. Submit one copy of the completed volumes 15 days prior to final inspection for final review. This copy will be reviewed and returned after final inspection, with the Design Agent's comments. Revise the content of the document sets as required prior to final submission.
- G. Submit three sets of revised final volumes plus electronic copy in final form within ten days after final inspection.

1.06 OPERATIONS AND MAINTENANCE MANUALS

- A. Contents: Prepare the Table of Contents for each volume, with each product or system description identified, in three parts as follows:
 - 1. **Part 1:** Directory, listing the names, addresses, and telephone numbers of the Design Agent, its Consultants, 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. Originals of warranties and bonds.
 - 4. **Part 4:** Scan entire manual and provide 3 copies on disc in electronic PDF format.

1.07 MATERIALS AND FINISHES MANUALS

- A. Building Products, Applied Materials, and Finishes: Include product data, with the catalog number, size, composition, and the color and texture designations. Include information for re-ordering custom manufactured products.
- B. 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.
- C. 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.
- 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 priming data and tests, and complete nomenclature and model number of replaceable parts.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- 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 01400.

- P. Additional Requirements: As specified in the individual product specification Sections.

1.09 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products (attic stock) 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. Include in the Operations and Maintenance Manuals within the appropriate material specification section.
- F. Submit prior to the final Application for Payment. 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. 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. Record Drawings and Shop Drawings: Legibly mark each item to record the actual construction including:
1. Measured horizontal and vertical locations of the underground utilities and appurtenances, referenced to permanent surface improvements. Include the locations and description of any existing utility lines and other existing installations of any kind or description encountered during construction. Note all changes in size, material, location, and elevation of all new or abandoned underground utility lines and pertinent work, including site grading. Document topography and drainage changes. Show the location of all valves, manholes, etc. and include dimensions to permanent features such as building corners. Note direction of each new valve opening. Show clearances between new utilities and existing crossed lines. Locate all bends, thrust blocks, and other restraints.
 2. The placement, size, and type of any fire extinguishers.
 3. Measured locations of internal utilities and appurtenances concealed in the construction.
 4. Field changes of dimension and detail.
 5. Details not on the original Contract drawings.
- G. Legibly marked Specifications, and legibly marked Record Drawings and Shop Drawings shall constitute the Project Record Documents in paper form.
- H. At completion of the Work of the Contract, the Contractor shall retain competent drafting personnel to transfer the information from the Project Record Documents in paper form to editable electronic formats to create "As-Built" Documents on base files provided by the Design Agent. The record construction drawings shall be produced in both AutoCAD format plus a record PDF copy of each drawing. AutoCAD files shall include all XREF, font, image, shape, and plot files. PDF files shall be saved full sheet size. The record Project Manual shall be in Microsoft Word form plus a record PDF of the entire manual. The electronic media containing this information will constitute the Project Record Documents in digital form, sometimes referred to as the "As-Built" Documents. Acceptable media are write-protected CD-R format discs or flash drives. Submit one full size printed set of drawings and specifications on 20 lb. white bond made from the As-Built files in addition to the electronic media.
- I. Associated materials including but not limited to the following are also required to be submitted at project close-out: shop drawings and cut sheets, RFIs, correspondence and meeting minutes, LEED scorecards, construction progress photographs, DEM permits including generator permits, certificates including Final Certificate of Occupancy, boiler and elevator certificates, easement rights, National Grid Rebate Applications, test and inspection documentation including fire pump test data, asbestos abatement plans and manifests. These materials may be

submitted in either paper or PDF digital format, organized by specification number, and clearly labeled. If paper copies are submitted, each box must be clearly labeled as to specific contents.

- J. If the project required geotechnical, archeological, or other miscellaneous studies or other reports, these shall also be submitted as Record Document in either paper or digital format.
- K. Labeling: In all cases, paper or digital submissions must contain the following information: Building, project or facility name, OCP Project number, submission date, and specific content index.
- L. No review or receipt of Project Record Documents by the Design Agent 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.
- M. 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.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

01 7810 CLOSEOUT REQUIREMENTS - Attachment A

A. *“No variations in this section for this Project.”*

END OF ATTACHMENT

01 7820 CLOSEOUT REQUIREMENTS - Attachment B
Small Project Changes

- A. The following amendments are made to this Section in order to facilitate execution of smaller projects at URI. They apply to the work of this project. All portions of the specification Section not deleted or amended remain in full force and effect for this project.
- B. Delete subparagraph 1.02 A. Additional certification is not required.
- C. Delete lines 1.02 C.1 and 3. Only the final release of liens remains as a requirement from this paragraph.
- D. Delete paragraph 1.03. General knowledge of construction is sufficient.
- E. Delete subparagraph 1.05 E. No preliminary submittal is required.
- F. In subparagraph 1.11 F, end the first sentence after “construction”, and delete the lines 1 thru 5. Record changes to the work as clearly as possible to facilitate future work.

END OF ATTACHMENT

SECTION 02 4119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes but is not limited to the following:
 - 1. Demolition and removal of interior partitions, or portions of interior partitions, as indicated.
 - 2. Demolition and removal of gypsum board only, as indicated.
 - 3. Demolition and removal of doors, frames and hardware as indicated.
 - 4. Demolition and removal of interior floor and ceiling finishes, as indicated.
 - 5. Demolition and removal of markerboards, as indicated.
 - 6. Demolition and removal of wall clock, as indicated.
 - 7. Demolition and removal of mechanical, plumbing and electrical systems, as indicated.
 - 8. Cutting, patching, repair of the following:
 - a. Existing walls, floors and ceiling surfaces to remain.
 - 9. Removal and salvage of the following for reinstallation, as indicated:
 - a. Doors and frames.
 - b. First floor ceiling tiles for plumbing installation at second floor.
 - 10. Removal and salvage of the following:
 - a. Fire extinguisher cabinet and fire extinguisher.
- B. Related Sections include the following:
 - 1. Division 01 Section "Summary" for use of premises and Owner-occupancy requirements.
 - 2. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
 - 3. Division 01 Section "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 PRE-DEMOLITION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 4. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control, and for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of stairs.
 - 5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building.
 - 7. Means of protection for items to remain and items in path of waste removal from building.
- C. Predemolition Photographs or Video: Submit before Work begins.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
 - 1. Comply with requirements specified in Division 01 Section "Summary."
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials are present in construction to be selectively demolished.
 - 1. If unidentified hazardous materials are encountered during the work, do not disturb hazardous materials or items suspected of containing hazardous materials. Stop all work on the project and immediately notify Architect.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
 - 1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 3. Cover and protect furniture, furnishings, and equipment that have not been removed.
 4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property.

1. Include cost of all transportation and disposal.
2. Provide verification of all disposal trips.
3. Hazardous materials are to be handled and disposed of in accordance with all State, Local, and Federal regulations.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 4119

SECTION 06 1053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Wood blocking in wall framing.

1.3 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 - 3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
 - 1. Fire-retardant-treated wood.

2. Power-driven fasteners.
3. Powder-actuated fasteners.
4. Expansion anchors.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack plywood and other panels flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
- B. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
- C. Deliver interior wood materials that are to be exposed to view only after building is enclosed and weatherproof, wet work other than painting is dry, and HVAC system is operating and maintaining temperature and humidity at occupancy levels.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent.
- C. Plywood: DOC PS 1.
 1. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
 2. Factory mark panels to indicate compliance with applicable standard.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 1. Use treatment that does not promote corrosion of metal fasteners.
 - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
 - 3. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841.
- C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Application: Treat the following:
 - 1. Concealed blocking in wall framing.
- F. Products: Subject to compliance with requirements, provide products by one of the following:
 - 1. Dricon.
 - 2. Hoover Treated Wood Products, Inc.
 - 3. Koppers Performance Chemicals.

2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
- B. For items of dimension lumber size, provide Construction or No. 2 lumber with 15 percent maximum moisture content and the following species:
 - 1. Hem-fir (north); NLGA.

- C. For blocking not used for attachment of other construction Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where carpentry is exposed to weather, in ground contact, fire retardant treated, or in area of high relative humidity, provide fasteners of with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

- B. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- C. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
- D. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.3 FIRE-RETARDANT-TREATED (FRT) MATERIALS INSTALLATION

- A. Cutting to length, drilling holes, joining cuts and light sanding are permissible. It is not necessary to field treat cut ends to maintain flame spread rating.
 - 1. Ripping, milling, and surfacing of FRT lumber is not permitted.
 - 2. FRT plywood can be cut in either direction without loss of fire protection.

3.4 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 1053

SECTION 07 2100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

1. Sound attenuation insulation.
2. Fire safing insulation.

1.3 DEFINITIONS

- A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: Full-size units for each type of exposed insulation indicated.
- C. Low-emitting product certification.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E 84.
2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Indoor Air Quality Requirements:
 1. Insulations are to be stored per manufacturer's recommendations for allowable temperature and humidity range. Insulations shall not be allowed to become damp.
 2. Where feasible, fiberglass, mineral wool, and other fibrous insulations shall be stored separately from materials which have high short-term emissions. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paint, wood preservatives, and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation; gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders.
 3. Where feasible, exposed fiberglass or mineral wool insulations shall not be stored in occupied spaces, near HVAC diffusers (supply or return), or near fresh air intakes.

PART 2 - PRODUCTS

2.1 MINERAL-WOOL BLANKET INSULATION (SOUND ATTENUATION)

- A. Manufacturers: Subject to compliance with requirements, provide one of the following:
 1. Johns Manville; MinWool Sound Attenuation Fire Batts (SAFB).
 2. Rockwool; AFB.
 3. Thermafiber; SAFB.
- B. Unfaced, Mineral-Wool Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 0, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
 1. R-Value: Minimum 3.7 per inch.
 2. NRC: 1.05 for 3 inch thickness.
 3. Nominal density of 2.5 lb/cu. ft minimum.
 4. Thickness: As indicated, not less than 3- inches.

2.2 MINERAL-WOOL-BOARD INSULATION (FIRE SAFING)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Johns Manville; MinWool Safing.
 - 2. Rockwool; SAFE.
 - 3. Thermafiber; Safing Insulation.

- B. Unfaced, Mineral-Wool Board Insulation: ASTM C 612; water repellent rigid insulation board with a rigid upper surface, with maximum flame-spread and smoke-developed indexes of zero, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
 - 1. Nominal density of 4.5 lb/cu. ft. minimum.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of substrates.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Install mineral-fiber insulation in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
- C. Install unfaced, slag-wool-fiber/rock-wool-fiber blanket insulation in penetrations in all non-fire rated horizontal floor/ceiling assemblies, including edge of slab conditions indicated. Fill annular space of penetration to resist the free passage of flame and the products of combustion.

3.5 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 2100

SECTION 07 8413 – PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Penetrations in fire-resistance-rated walls, including open penetrations.
- 2. Penetrations in horizontal assemblies.

- B. Related Sections include the following:

- 1. Division 07 Section “Thermal Insulation” for fire safing insulation in non-fire rated horizontal floor/ceiling assemblies.
- 2. Division 21 Sections specifying fire-suppression piping penetrations.
- 3. Division 22 Sections specifying plumbing piping penetrations.
- 4. Division 23 Sections specifying duct and piping penetrations.
- 5. Division 26 Sections specifying cable and conduit penetrations.

1.3 PREINSTALLATION MEETINGS

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

1.4 ACTION SUBMITTALS

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

- B. Shop Drawings: For each through-penetration firestop system, show each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences compliance with requirements for each condition indicated.

- 1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.

2. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.
3. For those firestop applications that exist for which no qualified tested system is available through a manufacturer, an engineering judgment derived from similar qualified tested system designs or other tests is to be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgment documents must follow requirements set forth by the International Firestop Council.

C. Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:

1. Types of penetrating items.
2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.
3. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For through-penetration firestop system products, signed by product manufacturer.
- C. Product Test Reports: From a qualified testing agency indicating through-penetration firestop system complies with requirements, based on comprehensive testing of current products.
- D. Material Safety Data Sheets.

1.6 QUALITY ASSURANCE

- A. Installation Responsibility: Assign installation of through-penetration firestop systems and fire-resistive joint systems in Project to a single qualified installer.
- B. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.
- C. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:
 1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
 2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:

- a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
 - b. Classification markings on penetration firestopping correspond to designations listed by the following:
 - 1) UL in its "Fire Resistance Directory."
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life if applicable, qualified testing and inspecting agency's classification marking applicable to Project, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.
- C. Do not use products and materials that contain flammable solvents.

1.9 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.
- C. Notify Owner's inspecting agency at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.
- D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by Owner's inspecting agency and building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Products: Subject to compliance with requirements, provide one of the through-penetration firestop systems indicated for each application in the Through-Penetration Firestop System Schedule at the end of Part 3 that are produced by one of the following manufacturers:
1. Hilti, Inc.
 2. 3M; Fire Protection Products Division.
 3. Tremco; Tremstop Fire Protection Systems Group.

2.2 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- B. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

2.3 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
1. Fire-resistance-rated walls include fire walls, fire-barrier walls, smoke-barrier walls, and fire partitions.
 2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

- C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
1. Horizontal assemblies include floors, floor/ceiling assemblies and ceiling membranes of roof/ceiling assemblies.
 2. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
 3. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- E. VOC Content: Provide penetration firestopping that complies with the following limits for VOC content when calculated according to 40 CFR 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.
- F. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:
1. Permanent forming/damming/backing materials, including the following:
 - a. Slag-/rock-wool-fiber insulation.
 - b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
 - c. Fire-rated form board.
 - d. Fillers for sealants.
 2. Temporary forming materials.
 3. Substrate primers.
 4. Collars.
 5. Steel sleeves.

2.4 FILL MATERIALS

- A. General: Provide through-penetration firestop systems containing the types of fill materials required in the Through-Penetration Firestop System Schedule at the end of Part 3 by referencing the types of materials described in this Article. Fill materials are those referred to in directories of referenced testing and inspecting agencies as "fill," "void," or "cavity" materials.

- B. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic or plastic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- C. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.
- D. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- E. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized steel sheet.
- F. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- G. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- H. Pillows/Bags/Blocks: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
 - 2. Grade for Horizontal Surfaces: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces.
 - 3. Grade for Vertical Surfaces: Nonsag formulation for openings in vertical and other surfaces.

2.5 MIXING

- A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of work.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with firestop system manufacturer's written instructions and with the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

- A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

- C. Install fill materials for firestop systems by proven techniques to produce the following results:
1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Identify through-penetration firestop systems with preprinted plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of edge of the firestop systems, and on both sides of partition, so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:
1. The words "WARNING - PENETRATION FIRESTOPPING SYSTEM - DO NOT DISTURB. NOTIFY BUILDING MANAGEMENT OF ANY DAMAGE."
 2. Contractor's name, address, and phone number.
 3. Through-penetration firestop system designation of applicable testing and inspecting agency.
 4. Date of installation.
 5. Through-penetration firestop system manufacturer's name.
 6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified, independent inspecting agency to inspect through-penetration firestops. Independent inspecting agency shall comply with ASTM E 2174 requirements including those related to qualifications, conducting inspections, and preparing test reports.
1. Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174, "Standard Practice for On-Site Inspection of Installed Fire Stops" or other recognized standard.
- B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.
- C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

3.6 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce systems complying with specified requirements.

3.7 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to alpha-alpha-numeric designations listed in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. Firestop Systems with No Penetrating Items.
 - 1. Available UL-Classified Systems: C-AJ-001-0999.
- C. Firestop Systems for Metallic Pipes, Conduit or Tubing:
 - 1. Available UL-Classified Systems: C-AJ-1001-1999 and W-L-1001-1999.
- D. Firestop Systems for Nonmetallic Pipe, Conduit or Tubing:
 - 1. Available UL-Classified Systems: C-AJ-2001-2999 and W-L-2001-2999.
- E. Firestop Systems for Electrical Cables:
 - 1. Available UL-Classified Systems: C-AJ-3001-3999 and W-L-3001-3999.
- F. Firestop Systems for Cable Trays:
 - 1. Available UL-Classified Systems: C-AJ-4001-4999 and W-L-3001-3999.
- G. Firestop Systems for Insulated Pipes:
 - 1. Available UL-Classified Systems: C-AJ-5001-5999 and W-L-5001-5999.
- H. Firestop Systems for Miscellaneous Electrical Penetrants (Busducts):
 - 1. Available UL-Classified Systems: C-AJ-6001-6999 and W-L-6001-6999.
- I. Firestop Systems for Miscellaneous Mechanical Penetrants (Ductwork):
 - 1. Available UL-Classified Systems: C-AJ-7001-7999 and W-L-7001-7999.

J. Firestop Systems for Groupings of Penetrants:

1. Available UL-Classified Systems: C-AJ-8001-8999 and W-L-8001-8999.

END OF SECTION 07 8413

SECTION 07 9200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Silicone joint sealants.
2. Latex joint sealants.
3. Acoustical joint sealants.

- B. Related Sections include the following:

1. Division 09 Section "Gypsum Board Assemblies" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.

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. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
 5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.5 ACTION SUBMITTALS

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

1.6 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- B. Qualification Data: For Installer.
- C. 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.
- D. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.
- E. 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.
- F. Warranties: Special warranties specified in this Section.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
 - 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.
- D. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.
 - 2. Each type of sealant and joint substrate indicated.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.8 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. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.

- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period for Silicone: 20 years from date of Substantial Completion.
- C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 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. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- F. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

- A. Mildew Resistant, Single-Component, Nonsag, 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 Silicones; Sanitary SCS1700.
 - c. Tremco; Tremsil 200 Sanitary.

2.3 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. American Sealants, Inc.; ASI 174.
 - b. Pecora Corporation; AC-20+.
 - c. Sherwin Williams; 950A.
 - d. Tremco; Tremflex 834.

2.4 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:
1. 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.
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Green Glue; Green Glue Noiseproofing Sealant.
 - b. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - c. Sherwin Williams; 950A.
 - d. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

2.5 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type 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: ASTM C 1330, Type C (closed-cell material with a surface skin) as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.6 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.

3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type 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 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 configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- 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 C 919 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.

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. Perimeter joints between interior wall surfaces and frames of interior doors.
 - b. Other joints as indicated.
 2. Joint Sealant: Latex.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- 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. Other joints as indicated.
 2. Joint Sealant: Single component, nonsag, mildew resistant, acid curing silicone.
 3. Joint-Sealant Color: White.
- C. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces at counters and backsplashes.
1. Joint Sealant Location:
 - a. Joints between counters and walls.
 - b. Joints between backsplashes and walls.
 - c. Joints between counters and backsplashes.
 - d. Other joints as indicated.
 2. Joint Sealant: Single component, nonsag, mildew resistant, acid curing silicone.
 3. Joint-Sealant Color: Clear.
- 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 range.

END OF SECTION 07 9200

SECTION 08 1213 – HOLLOW METAL FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Standard hollow metal frames.

- B. Related Sections:

- 1. Division 08 Section "Flush Wood Doors."
 - 2. Division 08 Section "Door Hardware" for door hardware.
 - 3. Division 08 Section "Glazing."
 - 4. Division 09 Section "Painting" for field painting hollow metal frames.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 2. Locations of reinforcement and preparations for hardware.
 - 3. Details of each different wall opening condition.
 - 4. Details of anchorages, joints, field splices, and connections.
 - 5. Details of accessories.
 - 6. Details of moldings, removable stops, and glazing.

C. Other Action Submittals:

1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with Door Hardware Schedule.

- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Do not store in a manner that traps excess humidity.
1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.8 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ceco Door Products; an ASSA ABLOY Group company.
 2. Curries Company; an ASSA ABLOY Group company.
 3. de La Fontaine Industries, Inc.
 4. Steelcraft; an Allegion company.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
- C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- D. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.
- E. Glazing: Comply with Division 08 Section "Glazing."

2.3 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Interior Frames: Fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated.
1. Fabricate frames with mitered or coped corners.
 2. Fabricate frames as face welded unless otherwise indicated.
 3. Frames for Wood Doors: 16 gauge steel sheet.
- C. Hardware Reinforcement: Fabricate reinforcement plates from same material as frames to comply with the following minimum sizes:
1. Hinges: Minimum 10 gauge by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
 2. Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 10 gauge.
 3. All Other Surface-Mounted Hardware: Minimum 12 gauge.

2.4 FRAME ANCHORS

- A. Floor Anchors: Formed from same material as frames, not less than 16 gauge thick, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
- B. Jamb Anchors:
 - 1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 18 gauge.

2.5 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/NAAMM- HMMA 861.
- C. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 - 4. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Four anchors per jamb from 60 to 90 inches high.
 - 2) Five anchors per jamb from 90 to 96 inches high.
 - 5. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- D. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.

- E. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8 and ANSI/NAAMM-HMMA 861.
 2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
- F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
 2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 3. Provide loose stops and moldings on inside of hollow-metal work.
 4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.6 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
 - 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.
 - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - b. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - c. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

- a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow-metal manufacturer's written instructions.
1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 08 1213

SECTION 08 1416 – FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Solid-core doors with wood-veneer faces.
- 2. Factory finishing flush wood doors.
- 3. Factory fitting flush wood doors to frames and factory machining for hardware.

- B. Related Sections:

- 1. Division 08 Section “Hollow Metal Frames” for hollow metal door frames for flush wood doors.
- 2. Division 08 Section “Glazing” for glazing requirements for flush wood doors.
- 3. Division 08 Section “Door Hardware.”

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of door indicated. Include details of core and edge construction, and trim for openings. Include factory-finishing specifications.

- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.

- 1. Provide a schedule of wood doors using same reference numbers for details, openings, and door types as those indicated in the Door Schedule.
- 2. Indicate dimensions and locations of mortises and holes for hardware.
- 3. Indicate dimensions and locations of cutouts.
- 4. Indicate factory finish requirements.

- C. Samples for Initial Selection: For factory-finished doors.

- D. Samples for Verification:

- 1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish.

2. Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.
 - a. Provide samples for each species of veneer and solid lumber required.
 - b. Finish veneer-faced door samples with same materials proposed for factory-finished doors.
3. Frames for light openings, 6 inches long, for each material, type, and finish required.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.5 QUALITY ASSURANCE

- A. Quality Standard: In addition to requirements specified, comply with AWI's "Architectural Woodwork Quality Standards Illustrated."
- B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
 1. Meet with Architect, electrical contractor, security systems supplier, and installers whose work interfaces with or affects flush wood doors.
 2. Review requirements for type of cut-out and back-box as part of the wood door and frame assembly.
 3. Document proceedings, including receipt of samples and approved shop drawings of security contact devices which accurately represent the installation of the device, back-box, and conduit terminations required.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags and wrap bundles of doors in plastic sheeting.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 - 2. Warranty shall include installation and finishing that may be required due to repair or replacement of defective doors, distribution, glass and glazing and removal of defective doors.
 - 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Masonite Architectural.
 - 2. Oshkosh Architectural Door Company.
 - 3. VT Industries Inc.
- B. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."
 - 1. Contract Documents contain selections chosen from options in quality standard and additional requirements beyond those of quality standard. Comply with those selections and requirements in addition to quality standard.
- B. WDMA I.S.1-A Performance Grade:
 - 1. Heavy Duty unless otherwise indicated.
- C. Particleboard-Core Doors:
 - 1. Particleboard: ANSI A208.1, Grade LD-2.
 - 2. Blocking: Provide all wood blocking in particleboard-core doors as needed to allow secure application of all hardware.

2.3 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:

1. Grade: Custom (Grade A faces).
2. Species: Beech to match existing.
3. Cut: Plain sliced.
4. Match between Veneer Leaves: Book match.
5. Assembly of Veneer Leaves on Door Faces: Running match.
6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
7. Core: Particleboard.
8. Construction: Five plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering. Faces are bonded to core using a hot press.
9. Stiles: 1-3/8- inch laminated strand lumber (LSL) with veneer band to match veneer face.
10. Crossbands: Engineered fiber.
11. Top and bottom rails: 1-1/8- inch LSL or hardwood.
12. Doors with glazed opening cutouts that exceed more than 40% of the door area shall have structural composite lumber cores (AWI SLC core) to maintain the Life Time Warranty.

B. Blocking: Provide blocking in all doors to allow for secure application of all hardware.

2.4 LIGHT FRAMES

A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads as follows unless otherwise indicated.

1. Wood Species: Same species as door faces.
2. Profile: Flush rectangular beads.

B. All cutouts for glazed openings in all wood doors must be a minimum of 6 inches from the edge of the door and/or other cutouts for locks, closers or other hardware.

2.5 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.

C. Openings: Cut and trim openings through doors in factory.

1. Light Openings: Trim openings with moldings of material and profile indicated.

2. Glazing: Furnished and installed by Division 08 Section "Glazing."

D. Drill all pilot holes for butt hinges and lock fronts at the factory.

2.6 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Finish doors at factory.

C. Transparent Finish:

1. Grade: Premium.
2. Finish: AWI's "Architectural Woodwork Standards" System 11, catalyzed polyurethane.
3. Staining: Custom to match Architect's sample.
4. Effect: Open grain finish.
5. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames before hanging doors.

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, comply with requirements in Division 08 Section "Door Hardware."

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.

1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
 2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- F. Light openings.
1. Install wood-veneered beads for light openings in flush wood doors using 16 gauge finish nails spaced at 3-inch from end of each molding and at 6-inch spacing. Fill all nail holes with wood putty to match molding.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 1416

SECTION 08 3113 – ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Access doors and frames for walls and ceilings.
- B. Related Sections include the following:
 - 1. Division 08 Section "Door Hardware" for mortise or rim cylinder locks and master keying.
 - 2. Division 09 Section "Painting" for field finishing factory-primed access doors and frames.

1.3 SUBMITTALS

- A. Product Data: For each type of access door and frame indicated. Include construction details, fire ratings, materials, individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each door face material, at least 3 by 5 inches in size, in specified finish.
- D. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.4 QUALITY ASSURANCE

- A. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

- A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics per the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. NFPA 252 or UL 10B for vertical access doors and frames.
 - 2. ASTM E 119 or UL 263 for horizontal access doors and frames.

2.2 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

- A. Source Limitations: Obtain access doors and frames through one source from a single manufacturer.
- B. Basis of Design Product: Subject to compliance with requirements, provide product indicated, or comparable product by one of the following:
 - 1. J. L. Industries, Inc.
 - 2. Karp Associates, Inc.
 - 3. Larsen's Manufacturing Company.
 - 4. Milcor Inc.
 - 5. Nystrom, Inc.
- C. Flush Access Doors with Exposed Flanges:
 - 1. **Basis-of-Design Product: Babcock Davis; Model BNT.**
 - 2. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
 - 3. Locations: Wall and ceiling, gypsum board and masonry walls.
 - 4. Uncoated Steel Sheet for Door: Nominal 14 gage.
 - a. Finish: Factory prime.
 - 5. Frame Material: Nominal 16 gauge, factory prime.
 - 6. Hinges: concealed pivoting rod hinge.
 - 7. Hardware: Mortise cylinder preparation.
 - 8. Door Size: 12x12.

D. Fire-Rated, Flush Access Doors with Exposed Flanges:

1. **Basis-of-Design Product: Babcock Davis; BU-Series Model BUT.**

2. Assembly Description: Fabricate door to fit flush to frame, uninsulated. Provide self-latching door with automatic closer and interior latch release. Provide manufacturer's standard-width exposed flange, proportional to door size.
3. Locations: Wall and ceiling, gypsum board.
4. Fire-Resistance Rating: Not less than 1 hour.
5. Uncoated Steel Sheet for Door: Nominal 14 gage.

- a. Finish: Factory prime.

6. Frame Material: Nominal 16 gauge, factory prime.
7. Hinges: concealed pivoting rod hinge.
8. Hardware: Mortise cylinder preparation.
9. Door Size: 12x12.

E. Hardware:

1. Lock: Mortise cylinder.

2.3 MATERIALS

- A. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304. Remove tool and die marks and stretch lines or blend into finish.

2.4 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
 1. Exposed Flanges: As indicated.
 2. Provide mounting holes in frames for attachment of units to metal framing.
- D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
 1. For cylinder lock, furnish two keys per lock and key all locks alike.

2.5 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Stainless-Steel Finishes:
 - 1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
 - 2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - a. Run grain of directional finishes with long dimension of each piece.
 - b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
 - c. Directional Satin Finish: No. 4.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.
- C. Install doors flush with adjacent finish surfaces.

3.2 ADJUSTING AND CLEANING

- A. Adjust doors and hardware after installation for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 08 3113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 06 Section "Rough Carpentry"
2. Division 06 Section "Finish Carpentry"
3. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
4. Division 08 Sections:
 - a. "Metal Doors and Frames"
 - b. "Flush Wood Doors"
 - c. "Stile and Rail Wood Doors"
 - d. "Interior Aluminum Doors and Frames"
 - e. "Aluminum-Framed Entrances and Storefronts"
 - f. "Stainless Steel Doors and Frames"
 - g. "Special Function Doors"
 - h. "Entrances"
5. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
6. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule

2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 70 – National Electric Code
2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
3. NFPA 101 – Life Safety Code
4. NFPA 105 – Smoke and Draft Control Door Assemblies
5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
 - a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
 - b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
 - a. Wiring Diagrams: For power, signal, and control wiring and including:
 - 1) Details of interface of electrified door hardware and building safety and security systems.
 - 2) Schematic diagram of systems that interface with electrified door hardware.
 - 3) Point-to-point wiring.
 - 4) Risers.
3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
 - a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. Door Hardware Schedule:
 - a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
 - b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
 - c. Indicate complete designations of each item required for each opening, include:
 - 1) Door Index: door number, heading number, and Architect's hardware set number.
 - 2) Quantity, type, style, function, size, and finish of each hardware item.
 - 3) Name and manufacturer of each item.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each hardware set cross-referenced to indications on Drawings.
 - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for hardware.
 - 8) Door and frame sizes and materials.
 - 9) Degree of door swing and handing.
 - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
 5. Key Schedule:
 - a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
 - b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
 - c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
 - d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
 - e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
 - f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
- C. Informational Submittals:
1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
 2. Provide Product Data:
 - a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
 - b. Include warranties for specified door hardware.
- D. Closeout Submittals:
1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
 - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Final approved hardware schedule edited to reflect conditions as installed.

- d. Final keying schedule
- e. Copy of warranties including appropriate reference numbers for manufacturersto identify project.
- f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
 - a. Fire door assemblies, in compliance with NFPA 80.
 - b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
 - a. For door hardware: DHI certified AHC or DHC.
 - b. Can provide installation and technical data to Architect and other related subcontractors.
 - c. Can inspect and verify components are in working order upon completion of installation.
 - d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.
4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:
 - a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
 - b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.
2. Smoke and Draft Control Door Assemblies:

- a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
 - b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.
3. Electrified Door Hardware
 - a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
 4. Accessibility Requirements:
 - a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.
- C. Pre-Installation Meetings
1. Keying Conference
 - a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
 - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - 2) Preliminary key system schematic diagram.
 - 3) Requirements for key control system.
 - 4) Requirements for access control.
 - 5) Address for delivery of keys.
 2. Pre-installation Conference
 - a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Inspect and discuss preparatory work performed by other trades.
 - c. Inspect and discuss electrical roughing-in for electrified door hardware.
 - d. Review sequence of operation for each type of electrified door hardware.
 - e. Review required testing, inspecting, and certifying procedures.
 - f. Review questions or concerns related to proper installation and adjustment of door hardware.
 3. Electrified Hardware Coordination Conference:
 - a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.
- B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.
- C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

- D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.
- F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Electrical System Roughing-In: Coordinate layout and installation of electrified doorhardware with connections to power supplies and building safety and security systems.

1.07 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
 - 1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
 - 2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
 - a. Mechanical Warranty
 - 1) Locks
 - a) Schlage ND Series: 10 years
 - 2) Exit Devices
 - a) Von Duprin: 3 years
 - 3) Closers
 - a) LCN 4000 Series: 30 years
 - b. Electrical Warranty
 - 1) Locks
 - a) Schlage: 1 year

1.08 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."
1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.
- B. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.
- C. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

- A. Fabrication
1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
 2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
 3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.
- B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.
- C. Cable and Connectors:
1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
 2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.

3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.03 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Ives 5BB series
2. Acceptable Manufacturers and Products:
 - a. McKinney TA series

B. Requirements:

1. Provide hinges conforming to ANSI/BHMAA156.1.
2. Provide five knuckle, ball bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
 - a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
 - b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
 - a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
 - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
5. 2 inches or thicker doors:
 - a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
 - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - a. Steel Hinges: Steel pins
 - b. Non-Ferrous Hinges: Stainless steel pins
 - c. Out-Swinging Exterior Doors: Non-removable pins
 - d. Out-Swinging Interior Lockable Doors: Non-removable pins
 - e. Interior Non-lockable Doors: Non-rising pins
9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

2.04 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Schlage ND series
2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return springcassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
7. Provide electrified options as scheduled in the hardware sets.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
 - a. Lever Design: RHO

2.05 ELECTRONIC ACCESS CONTROL LOCKSETS AND EXIT DEVICE TRIM

A. Manufacturers:

1. Scheduled Manufacturer and Product:
 - a. Schlage AD Series
2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

1. Provide adaptable electronic access control products that comply with the following requirements:
 - a. Listed, UL 294 - The Standard of Safety for Access Control System Units.
 - b. Compliant with ANSI/BHMA A156.25 Grade 1 Operation and Security.
 - c. Certified to UL10C, FCC Part15, Florida Building Code Standards TAS 201 large missile impact, TAS 202 and TAS 203.
 - d. Compliant with ASTM E330 for door assemblies.
 - e. Compliant with ICC / ANSIA117.1, NFPA 101, NFPA 80, and Industry Canada IC.
2. Functions: Provide functions as scheduled that are field configurable without taking the adaptable electronic product off the door.
3. Emergency Override: Provide mechanical key override; cylinders: Refer to "KEYING" article, herein.
4. Levers:
 - a. Vandal Resistance: Exterior (secure side) lever rotates freely while door remains locked, preventing damage to internal lock components from vandalism by excessive force.
 - b. Provide non-handed lever trim that operates independently of non-locking levers.
 - c. Style: RHO
 - d. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.
5. Features:
 - a. Audible feedback that can be enabled or disabled.
 - b. Tamper-Resistant Screws: Tamper torx screws on inside escutcheon for increased security.

- c. Visual tri-colored LED indicators that indicate activation, additional PIN code credential required, operational systems status, system error conditions and low power conditions.
 - d. Door Position Switch
 - e. Interior Cover Tamper Guard
 - f. Mechanical Key Override
 - g. Request to Exit
 - h. Request to Enter
 - i. Lock/Unlock Status
6. Credential Reader
- a. Credential Reader Configuration: Provide credential reader modules in the following configurations as indicated in door hardware sets.
 - b. Credential Reader Capabilities: Provide credential readers capable of operating with the following integrated software partners.
 - 1) 13.56 MHz Smart card credentials:
 - a) Secure section (Multi-Technology and Smartcard): Schlage MIFARE Classic, Schlage MIFARE DESFire EV1/EV3, PIV and PIV-I Compatible
 - b) 13.56 MHz Serial number only (Multi-Technology and Smartcard): MIFARE, DESFire, HID iClass, MIFARE DESFire EV1/EV3
 - c) 125 kHz Proximity card credentials: Schlage, XceedID, HID, GE/CASI ProxLite and AWID.
 - 2) Multi-Technology readers that read both 13.56 MHz Smart Cards and 125 kHz Prox cards.
 - 3) Dual credential reading capabilities credential card or fob and PIN.
 - 4) 12 button keypad with backlit buttons.
 - 5) Magnetic Card Reader:
 - a) Full insertion or swipe reader capable of reading information along full length of magnetic stripe.
 - b) Magnetic card triple track reader capable of reading tracks 1, 2 or 3 per configuration in field.

2.06 CYLINDERS

A. Manufacturers and Products:

- 1. Scheduled Manufacturer and Product:
 - a. Schlage Everest 29 T
- 2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

- 1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
- 2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
- 3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
- 4. Nickel silver bottom pins.

2.07 KEYING

A. Scheduled System:

1. Existing factory registered system:
 - a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Permanent Keying:
 - a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
 - 1) Master Keying system as directed by the Owner.
 - b. Forward biting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
 - c. Provide keys with the following features:
 - 1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - 2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
 - d. Identification:
 - 1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
 - 2) Identification stamping provisions must be approved by the Architect and Owner.
 - 3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
 - 4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
 - 5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
 - e. Quantity: Furnish in the following quantities.
 - 1) Permanent Control Keys: 3.
 - 2) Master Keys: 6.
 - 3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
 - 4) Key Blanks: Quantity as determined in the keying meeting.

2.08 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Rockwood

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.

2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.09 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Rockwood

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button or thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.10 DOOR CLOSERS

A. Manufacturers

1. Scheduled Manufacturer:
 - a. LCN 4040 XP
2. Acceptable Manufacturer:
 - a. No Substitute

2.11 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.12 COAT HOOK

A. Manufacturers

1. Scheduled Manufacturer:
 - a. ROCKWOOD
2. Acceptable Manufacturer:
 - a. Ives
 - b. Burns

2.13 FINISHES

A. FINISH: BHMA 626/652 (US26D); EXCEPT:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
4. Protection Plates: BHMA 630 (US32D)
5. Overhead Stops and Holders: BHMA 630 (US32D)
6. Door Closers: Powder Coat to Match
7. Wall Stops: BHMA 630 (US32D)
8. Latch Protectors: BHMA 630 (US32D)
9. Weatherstripping: Clear Anodized Aluminum
10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 2. Custom Steel Doors and Frames: HMMA 831.
 3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A

4. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.
- C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.
- I. Lock Cylinders:
 1. Furnish permanent cores to Owner for installation.
- J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:
 1. Conduit, junction boxes and wire pulls.
 2. Connections to and from power supplies to electrified hardware.
 3. Connections to fire/smoke alarm system and smoke evacuation system.
 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
 5. Connections to panel interface modules, controllers, and gateways.
 6. Testing and labeling wires with Architect's opening number.
- K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- L. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- M. Overhead Stops/holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- N. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

- O. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- P. Stops: Provide floor stops for doors unless wall or other typestops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
- Q. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- R. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- S. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 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.
 - 1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
 - 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 - 3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

- A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.







- B. Discrepancies, conflicting hardware, and missing items are to 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.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

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Hardware Group No. 01

For use on Door #(s):

Provide each SGL door(s) with the following:

QT		DESCRIPTION	CATALOG NUMBER		ITEMID	FINISH	MFR
Y							
3	EA	HINGE	5BB1 4.5 X 4.5		652		IVE
1	EA	STOREROOM LOCK	ND80P6D RHO 14-042		626		SCH
1	EA	SURFACE CLOSER	4040XP H WMS		689		LCN
1	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630		IVE
1	EA	FLOOR STOP	FS410		626		IVE
3	EA	SILENCER	SR64		GRY		IVE

Hardware Group No. 02

For use on Door #(s):

Provide each SGL door(s) with the following:

QT		DESCRIPTION	CATALOG NUMBER		ITEMID	FINISH	MFR
Y							
3	EA	HINGE	5BB1 4.5 X 4.5			652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50P6D RHO			626	SCH
1	EA	FLOOR STOP	FS410			626	IVE
3	EA	SILENCER	SR64			GRY	IVE
1	EA	COAT HOOK	RM802			US32D	ROC

Hardware Group No. 03

For use on Door #(s):

Provide each SGL door(s) with the following:

QT		DESCRIPTION	CATALOG NUMBER		ITEMID	FINISH	MFR
Y							
3	EA	HINGE	5BB1 4.5 X 4.5			652	IVE
1	EA	ELEC LOCK SALVAGE	AD-300-MS-60-MT-RHO-P6 12/24 VDC	⚡		626	SCE
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ			689	LCN
1	EA	FLOOR STOP	FS410			626	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 04

For use on Door #(s):

Provide each SGL door(s) with the following:

QT		DESCRIPTION	CATALOG NUMBER		ITEMID	FINISH	MFR
Y							
3	EA	HINGE	5BB1 4.5 X 4.5			652	IVE
1	EA	PRIVACY LOCK	ND40S RHO			626	SCH
1	EA	FLOOR STOP	FS410			626	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. EXISTING

For use on Door #(s):

Provide each SGL door(s) with the following:

QT		DESCRIPTION	CATALOG NUMBER		ITEMID	FINISH	MFR
Y							
1	EA	ELEC LOCK SALVAGE	AD-300-MS-60-MT-RHO-P6 12/24 VDC	⚡		626	SCE
1		EXISTING TO REMAIN	BALANCE OF HARDWARE				

END OF SECTION

SECTION 08 8000 – GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Flush wood doors.
- B. Related Sections include the following:
 - 1. Division 08 Section “Flush Wood Doors.”

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.4 ACTION SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
- C. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For installers.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- B. Source Limitations for Glass: Obtain each type of glass through one source from a single manufacturer.
- C. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.
- D. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.
 - 1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- E. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.
 - 1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
 - 2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.
- F. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201.
 - 1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.
 - 2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS

- A. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.2 GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 795.
 - b. GE Advanced Materials - Silicones; SilPruf SCS2000.
 - c. Pecora Corporation; 895.
 - d. Tremco Incorporated; Spectrem 2.
 2. Type and Grade: S (single component) and NS (nonsag).
 3. Class: 50.
 4. Use Related to Exposure: NT (nontraffic).
 5. Uses Related to Glazing Substrates: M, G, A, and, as applicable to glazing substrates indicated, O.

- a. Use O Glazing Substrates: Coated glass and aluminum coated with a high-performance coating.

2.3 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 1. AAMA 804.3 tape, where indicated.
 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:
 1. Type 1, for glazing applications in which tape acts as the primary sealant.
 2. Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.4 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.5 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites in a manner that produces square edges with slight kerfs at junctions with outdoor and indoor faces.
- C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing glazing, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep system.
 - 3. Minimum required face or edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Glazing channel dimensions provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until just before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.6 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
- E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.7 MONOLITHIC FLOAT-GLASS SCHEDULE

- A. Glass Type: Clear fully tempered float glass.
 - 1. Thickness: 1/4 inch.
 - 2. Provide safety glazing labeling.

END OF SECTION 08 8000

SECTION 09 2116 – GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

1. Non-load-bearing steel framing members.
2. Interior gypsum board.
3. Patching and repair of existing gypsum board.

- B. Related Sections include the following:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood blocking built into gypsum board assemblies.
2. Division 07 Section "Thermal Insulation" for sound attenuation insulation installed in assemblies that incorporate gypsum board.
3. Division 08 Section "Access Doors and Frames."
4. Division 09 Section "Painting" for primers applied to gypsum board surfaces.

- C. Products installed, but not furnished, under this Section include the following:

1. Access doors and frames, furnished by Fire Protection, Plumbing, Mechanical, and Electrical Subcontractors in accordance with Division 08 Section "Access Doors and Frames."

1.3 PERFORMANCE REQUIREMENTS

- A. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."

1.4 SUBMITTALS

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

- B. Samples: For the following products:
 - 1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.
- C. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
 - 1. Steel sheet.
 - 2. Expansion anchors.
 - 3. Power-actuated anchors.
 - 4. Mechanical fasteners.
- D. Research/Evaluation Reports: For cold-formed metal framing.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.
- B. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- C. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
- D. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- E. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- F. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Install mockups for the following:
 - a. Each level of gypsum board finish indicated for use in exposed locations.
 - 2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
 - 3. Simulate finished lighting conditions for review of mockups.
 - 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.
- C. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install interior products until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or blotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 INTERIOR NON-LOAD-BEARING STEEL FRAMING

- A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:
 - 1. ClarkDietrich Building Systems.
 - 2. MarinoWare; a division of Ware Industries.
 - 3. SCAFCO Steel Stud Company.
- B. Interior Framing Members, General: Comply with ASTM C 645 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal.
 - 2. Protective Coating: Comply with ASTM C 645; roll-formed from hot-dipped galvanized steel; complying with ASTM A 1003/A 1003M and ASTM A 653/A 653M G40 or having a coating that provides equivalent corrosion resistance. A40 galvanized products are not acceptable.
 - a. Coatings shall demonstrate equivalent corrosion resistance with an evaluation report acceptable to the authority having jurisdiction.

- C. Steel Studs and Runners: ASTM C 645.
1. Non-Structural Studs: Cold-formed galvanized steel C-studs as per ASTM C 645 for conditions indicated below:
 - a. Flange Size: 1-1/4-inch.
 - b. Web Depth: As indicated on Drawings.
 - 1) Minimum Thickness: 0.033 inch.
 - 2) Minimum Design Thickness: 0.0346 inch.
- D. Slip-Type Head Joints: Where indicated, provide the following:
1. Deflection Track: Slotted steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

2.2 INTERIOR GYPSUM BOARD

- A. General: Complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed.
 - b. G-P Gypsum.
 - c. National Gypsum Company.
 - d. USG Corporation.
- B. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.
- C. Type X:
1. Thickness: 5/8 inch.
 2. Long Edges: Tapered.
- D. Moisture- and Mold-Resistant Gypsum Board, ASTM C 1396/C 1396M. With moisture- and mold-resistant core and coated surfaces.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed; M2Tech.
 - b. G-P Gypsum; ToughRock Fireguard X Mold-Guard Gypsum Board.
 - c. National Gypsum Company; Gold Bond XP Fire-Shield Gypsum Board.
 - d. USG Corporation; Mold Tough Firecode X Panels.
 2. Thickness: 5/8 inch, Type X.

3. Long Edges: Tapered.
4. Mold Resistance: ASTM D 3273, score of 10.

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - d. Expansion (control) joint.

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Sound Attenuation Blankets: As specified in Division 07 Section "Thermal Insulation."
- C. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of areas and substrates.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.3 INTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

- B. Install studs so flanges within framing system point in same direction.
 - 1. Space studs for all applications at 16 inches o.c., unless otherwise indicated.
- C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb, unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
 - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.4 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. STC-Rated Assemblies: 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 C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

3.5 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Type X: As indicated on Drawings.
 - 2. Mold-Moisture-Resistant Type: At casework/sink wall location.
- B. Single-Layer Application:
 - 1. On partitions/walls, apply gypsum panels either vertically (parallel to framing) or horizontally (perpendicular 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 high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.

2. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.6 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations indicated on Drawings, or if not indicated, according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 1. Cornerbead: Use at outside corners.
 2. LC-Bead: Use at exposed panel edges.

3.7 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 2. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.

3.8 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or blotchy surface contamination and discoloration.

END OF SECTION 09 2116

SECTION 09 6513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Rubber base.
 - 2. Resilient molding accessories.
- B. Related Sections:
 - 1. Division 09 Section "Resilient Tile Flooring" for resilient tile flooring and flooring preparation requirements.
 - 2. Division 09 Section "Linoleum Flooring."
 - 3. Division 09 Section "Tile Carpeting."

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated.
- C. Samples for Verification: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches long, of each resilient product color, texture, and pattern required.
- D. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.6 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.8 WARRANTY

- A. General Warranty: Special warranties specified in this Section 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. Limited Warranty: Written warranty, signed by manufacturer agreeing to repair or replace resilient flooring, installed according to manufacturer's written recommendations, that fails in performance, materials, or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 VINYL BASE

- A. Product (**VB-1**): Subject to compliance with requirements, provide one of the following:
 - 1. Tarkett Johnsonite; Traditional Vinyl Wall Base.
 - 2. Mannington Commercial; Mannington Edge.
 - 3. Roppe Corporation, Vinyl Wall Base.
- B. Product Standard: ASTM F 1861, Type TV (vinyl, thermoplastic).
 - 1. Group: I (solid, homogeneous).
 - 2. Style and Location:
 - a. Style B, Cove: Provide in all areas.
- C. Minimum Thickness: 0.125 inch.
- D. Height: 4 inches.
- E. Lengths: Coils in manufacturer's standard length.
- F. Inside and Outside Corners: Job formed.
- G. Color: As selected by Architect from manufacturer's full range.

2.2 RESILIENT MOLDING ACCESSORY

- A. Resilient Molding Accessory:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Mannington.
 - b. Roppe Corporation.
 - c. Tarkett.
 - 2. Material: Rubber.
 - 3. Provide manufacturer's standard reducer strip for the following conditions:
 - a. Resilient to existing flooring.
 - b. Carpet tile to existing flooring.
 - 4. Colors: As selected by Architect from full range of industry colors.

2.3 INSTALLATION MATERIALS

- A. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
 - 1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), except that adhesive for rubber stair treads shall have a VOC content of 60 g/L or less.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until they are same temperature as the space where they are to be installed.
 - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- D. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

- C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of resilient floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
- B. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient products until Substantial Completion.

END OF SECTION 09 6513

SECTION 09 5113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Acoustical panels and exposed suspension systems for ceilings.
 - 2. Reinstallation of salvaged ceiling panels.
- B. Related Section:
 - 1. Division 02 Section "Selective Demolition" for salvage of existing ceiling panels.

1.3 DEFINITIONS

- A. CAC: Ceiling Attenuation Class.
- B. LR: Light Reflectance coefficient.
- C. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1. Ceiling suspension system members.
 - 2. Method of attaching hangers to building structure.
 - 3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
 - 4. Minimum Drawing Scale: 1/8 inch = 1 foot.
- C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Panel: Set of 6-inch- square Samples of each type, color, pattern, and texture.

2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch- long Samples of each type, finish, and color.

- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.
- E. Research/Evaluation Reports: For each acoustical panel ceiling and components.
- F. Maintenance Data: For finishes to include in maintenance manuals.
- G. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, and partition assemblies.

1.9 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.
 2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of quantity installed.

1.10 WARRANTY

- A. Special Warranty for Acoustical Panel Ceilings and Suspension Systems: Manufacturer's standard form in which manufacturer agrees to replace acoustical panel ceilings and suspension systems that fail in materials or workmanship within specified warranty period.
1. Failure of ceiling panels includes sagging and warping, and growth of mold, mildew and stain causing bacteria.
 2. Failure of suspension systems includes rusting.
 3. Warranty does not cover damages that may occur from vibrations, fire, water, freezing temperatures, accident or any form of abuse or exposure to abnormal conditions.
 4. Warranty Period: 30 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7 and the Rhode Island State Building Code.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
 2. Smoke-Developed Index: 450 or less.
- C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 ACOUSTICAL PANELS, GENERAL

- A. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.
- B. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.

- C. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.
- D. Antimicrobial Fungicide Treatment: Provide acoustical panels with face and back surfaces coated with antimicrobial treatment consisting of manufacturer's standard formulation with fungicide added to inhibit growth of mold and mildew and showing no mold or mildew growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products as indicated by **Armstrong World Industries, Inc.** or a comparable product by one of the following:
 - 1. CertainTeed, Inc.
 - 2. USG Interiors, Inc.
- B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
 - 1. **Ceiling Type ACT-1:**
 - a. Basis of Design Product: **Armstrong World Industries, Inc.; Fine Fissured #1728.**
 - 1) Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
 - 2) Pattern: CE (perforated, small holes and lightly textured)
 - 3) Color: White.
 - 4) LR: Not less than 0.85.
 - 5) NRC: Not less than 0.55.
 - 6) CAC: Not less than 33.
 - 7) Edge/Joint Detail: Square.
 - 8) Thickness: 5/8 inch.
 - 9) Modular Size: 24 by 24 inches.
 - 10) Antimicrobial Treatment: BioBlock + and HumiGuard Plus.

2.4 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

- B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- diameter wire.
- E. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- F. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- G. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.
- H. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in-place.

2.5 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

- A. Wide-Face, Capped, Double-Web, Hot-Dip Galvanized, G60, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, hot-dip galvanized according to ASTM A 653/A 653M, G60 coating designation, with prefinished, cold-rolled, 15/16-inch- wide, metal caps on flanges.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide **Armstrong World Industries, Inc.; Prelude XL 15/16" Exposed Tee System** or a comparable product by one of the following:
 - a. CertainTeed.
 - b. USG Interiors, Inc.
 - 2. Structural Classification: Intermediate duty system.
 - 3. Face Design: Flat, flush.
 - 4. Face Finish: Painted white, typical.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
 - 1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.

2.7 ACOUSTICAL SEALANT

- A. Products: Comply with requirements in Division 07 Section "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 8. Do not attach hangers to steel deck tabs.
 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5113

SECTION 09 6543 - LINOLEUM FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Linoleum tile flooring.
 - 2. Floor preparation.
- B. Related Sections:
 - 1. Division 02 Section "Selective Demolition" for flooring removals.
 - 2. Division 09 Section "Resilient Base and Accessories" for resilient base installed with linoleum.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Prior to installation of linoleum floor coverings, conduct preinstallation meeting at Project site in accordance with Division 01 Section "Project Management and Coordination."
 - 1. Meet with Owner's Project Manager, Architect and manufacturer's representative.
 - 2. Review substrate conditions, moisture testing reports, manufacturer's installation instructions, and warranty requirements.
 - 3. Document proceedings, including corrective measures or actions required, and furnish copy to each participant.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each type of floor covering. Include floor covering layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- C. Samples for Initial Selection: For each type of floor covering indicated.
 - 1. Include similar Samples of installation accessories involving color selection.

- D. Samples for Verification: In manufacturer's standard size, but not less than 6-by-9-inch sections of each color and pattern of floor covering required.
 - 1. Heat-Welding Bead: Include manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.
- E. Product Schedule: For floor coverings.
- F. Warranty: Special warranty specified in this Section.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of linoleum flooring to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor covering installation.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required.
 - 2. Provide a minimum of one certified Master Installer for the entire installation of linoleum flooring, for the duration of the project.
- B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups for floor coverings including resilient base and accessories.
 - a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect, including two seams.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- C. Preconstruction Testing Service: Engage a qualified independent testing agency to perform moisture vapor emission and relative humidity testing indicated below.
1. ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 2. ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store floor coverings and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.
1. Floor Tile: Store on flat surfaces.

1.10 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 95 deg F, in spaces to receive floor coverings during the following time periods:
1. 72 hours before installation.
 2. During installation.
 3. 72 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during floor covering installation.
- D. Close spaces to traffic for 72 hours after floor covering installation.
- E. Install floor coverings after other finishing operations, including painting, have been completed.

1.11 WARRANTY

- A. Special Warranty: Written warranty, signed by manufacturer agreeing to repair or replace linoleum flooring that fails in performance, materials, or workmanship within specified warranty period.
1. Warranty Period: 10 years from date of Substantial Completion.

- B. Installer Warranty: Written warranty, signed by Installer agreeing to repair or replace flooring, installed according to manufacturer's written recommendations, that fails in performance, materials, or workmanship within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For linoleum flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 LINOLEUM TILE FLOORING

- A. Basis-of-Design Product (**MCT-1**): Subject to compliance with requirements, provide the following:
 - 1. **Forbo Flooring, Inc.; MCT.**
- B. Floor Tile: ASTM F 2195, Type I, linoleum floor tile with polyester backing.
 - 1. Static Limit Load: ASTM F 970; 1500 psi.
- C. Seaming Method: Standard.
- D. Size: Manufacturer's standard, 13 by 13 inches.
- E. Thickness: 0.10 inch.
- F. Surface treatment: Manufacturer's standard surface treatment, water-based, used to reduce maintenance.
- G. Color: As indicated on Materials List.

2.3 INSTALLATION MATERIALS

- A. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
 - 1. Provide manufacturer's recommended trowel-applied, full-spread, high moisture adhesive for each flooring product specified as required to maintain manufacturer and installer warranty requirements. Comply with manufacturer's requirements for installation on porous or non-porous substrates, and for maximum relative humidity and alkalinity in accordance with testing procedures indicated.

2. Adhesives shall comply with the following limits for VOC content: 50 g/L or less.

2.4 SUBSTRATE PREPARATION

- A. Primer: ASTM C1059, Type I, latex formulation for use with underlayments.
 1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Ardex; P 51 Primer.
 - b. Koster; VAP 1-06.
 - c. Laticrete; NXT Primer.
 - d. MAPEI Corporation; Primer T for underlayments.
- B. Underlayment: ASTM A118.4, 5000 psi compressive strength at 28 days; trowel applied cementitious underlayment for filling holes, depressions, and damaged areas of concrete slabs in excess of 1/2-inch depth.
 1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Ardex; SD-P.
 - b. Koster; Repair Mortar.
 - c. Laticrete; NXT Patch.
 - d. MAPEI Corporation; Mapecem Quickpatch.
- C. Self-Leveling Underlayment: ASTM C109, minimum 4,200 psi compressive strength at 28 days; cementitious powder mixed with water to produce a free-flowing self-leveling underlayment for rapid leveling of concrete slabs that have been shot-blasted and/or with depressions of up to 1-inch depth.
 1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Ardex; K 15.
 - b. Koster; LevelStrong.
 - c. Laticrete; NXT Level Plus.
 - d. MAPEI Corporation; Novoplan 2 Plus.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor coverings.

- C. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of substrates.

3.2 PREPARATION FOR EXISTING CONCRETE SLABS

- A. Prepare existing substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- C. Test concrete slabs for moisture following installation of underlayment(s), but do not test surface of self-leveling underlayment for moisture or pH.
 - 1. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - a. Surface pH not to exceed 9.
 - 2. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 to 5 lb. of water/1000 sq. ft. in 24 hours, as required by manufacturer's written recommendation for maximum moisture content.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
 - 3. Porosity Testing: Perform tests as follows prior to installation of flooring.
 - a. Perform water absorption testing in accordance with ASTM F 3191 to determine if the substrate surface is porous or non-porous.
 - b. Substrate and ambient temperature: 75 +/- 10 degrees F.
 - c. Ambient humidity: 50 +/- 10 percent relative humidity.
- D. Prime all existing concrete surfaces. Allow primer to dry for 2 to 3 hours at 70 deg F, but not more than 24 hours before installation of underlayment. Areas of primer that have dried for more than 24 hours must be re-primed prior to application of underlayment. Comply with manufacturer's written recommendations and the following:
 - 1. Primer: Pour, mop or spray primer onto the surface. Apply an even thickness of primer to the prepared substrate using a bristle broom. Remove any puddles or thick areas.

2. Underlayment: Apply underlayment to existing holes, depressions, and cracks in substrate as required for preparation of installation of self-leveling underlayment.
3. Self-Leveling Underlayment: Prime surface and install self-leveling underlayment within 24 hours. Pour or pump self-leveling underlayment over the primed substrate and spread with a spike roller or gauging rake. Use a smoothing paddle to combine pours and to obtain a flat smooth surface.
 - a. Furnish and install self-leveling underlayment on all existing slabs to receive new flooring, including those that have had existing VAT, VCT and/or mastic removed by the shot-blast method.
 - 1) Floor preparation work includes installation of underlayment as required and self-leveling underlayment in 1/4-inch thickness, unless otherwise indicated.
- E. Do not install floor tiles until they are same temperature as space where they are to be installed.
 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 INSTALLATION, GENERAL

- A. Comply with manufacturer's written instructions for installing floor coverings.
 1. Installation is not to begin until the HVAC system is operational, and the following conditions are maintained for at least 48 hours before, during and 72 hours after completion:
 - a. Ambient Temperature: Between 65 and 85 degrees F, unless otherwise stated by installed products manufacturer.
 - b. Ambient Humidity: Between 35 and 55 percent, unless otherwise stated by installed products manufacturer.
 - c. Substrate Temperature: Not less than 65 degrees F or more than 85 degrees F before, during and after installation, unless otherwise stated by installed products manufacturer.
 - 1) Do not install flooring unless substrate temperature is at least 5 degrees above dew point with temperature rising.
- B. Scribe and cut floor coverings to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.
- C. Extend floor coverings into toe spaces, door reveals, closets, and similar openings. Refer to Drawings for termination locations at doors. Review each location with Architect in field prior to installation.

- D. Maintain reference markers, holes, or openings that are in place or marked for future cutting by repeating on floor coverings as marked on subfloor. Use chalk or other nonpermanent marking device.
- E. Install floor coverings on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of floor covering installed on covers and adjoining floor covering. Tightly adhere floor covering edges to substrates that abut covers and to cover perimeters.
- F. Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- G. Heat-Welded Seams: For seamless installation, comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.

3.4 LINOLEUM FLOOR TILE INSTALLATION

- A. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so floor tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay floor tiles in pattern indicated.
- B. Match floor tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed floor tiles.
 - 1. Lay floor tiles with grain running in one direction and in pattern of colors indicated.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor coverings.
- B. Perform the following operations immediately after completing floor covering installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor coverings from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. After allowing drying room film (yellow film caused by linseed oil oxidation) to disappear, cover floor coverings with undyed, untreated building paper until inspection for Substantial Completion.

- E. Do not move heavy or sharp objects directly over linoleum floor coverings. Place plywood or hardboard panels under objects while they are being moved.

3.6 DEMONSTRATION AND TRAINING

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to clean and maintain linoleum flooring. Refer to Division 01 Section Demonstration and Training."

END OF SECTION 09 6543

SECTION 09 6813 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes:
 - 1. Modular carpet tile.
 - 2. Floor preparation.
- B. Related Sections include the following:
 - 1. Division 02 Section "Selective Demolition" for flooring removals.
 - 2. Division 09 Section "Resilient Base and Accessories" for resilient wall base and molding accessories installed with carpet tile.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation recommendations for each type of substrate.
- B. Shop Drawings: Show the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
 - 2. Carpet tile type, color, and dye lot.
 - 3. Type of subfloor.
 - 4. Type of installation.
 - 5. Pattern of installation.
 - 6. Pattern type, location, and direction.
 - 7. Pile direction.
 - 8. Type, color, and location of insets and borders.
 - 9. Type, color, and location of edge, transition, and other accessory strips.
 - 10. Transition details to other flooring materials.
- C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.
- D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.
- E. Qualification Data: For Installer.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency.
- G. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.
- H. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.
- B. Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Mockups: Before installing carpet tile, build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Approved mockups may become part of the completed Work if undamaged at time of Substantial Completion.
- D. Preconstruction Testing Service: Engage a qualified independent testing agency to perform testing indicated below.
 1. ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.
 2. ASTM F 3191, Standard Practice for Field Determination of Substrate Water Absorption (Porosity) for Substrates to Receive Resilient Flooring.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to carpet tile installation including, but not limited to, the following:
 1. Review delivery, storage, and handling procedures.
 2. Review ambient conditions and ventilation procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104, Section 5, "Storage and Handling."
- B. Indoor Air Quality Management Plan: The following practices shall be implemented in accordance with the Construction Indoor Air Quality Management Plan as required in Division 01 Section "Indoor Air Quality Requirements."
 - 1. Carpeting to be stored per manufacturer's recommendations for allowable temperature and humidity range. Products shall not be allowed to become damp.
 - 2. Where feasible, remove carpeting from packaging and store in unoccupied, ventilated areas (100% outside air supply, minimum of 1.5 air changes per hour, and no recirculation) for 24-72 hours prior to installation. Carpeting shall not be stored with materials which have high emissions of VOCs or other contaminants. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paint, wood preservatives, and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation; gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders.

1.6 PROJECT CONDITIONS

- A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."
- B. Environmental Limitations: Do not install carpet tiles until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

1.7 WARRANTY

- A. Special Warranty for Carpet Tile: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, loss of tuft bind strength, excess static discharge, and delamination.
 - 3. Warranty Period: Lifetime.

- B. Installer Warranty: Written warranty, signed by Installer agreeing to repair or replace flooring, installed according to manufacturer's written recommendations, that fails in performance, materials, or workmanship within specified warranty period.
1. Warranty Period: One year from date of Substantial Completion.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Carpet Type CPT-1:

1. Manufacturer: Shaw Contract.
2. Style: Immerse Tile J0187.
3. Color: As indicated on Material List.
4. Pile Characteristic: Multi-Level Pattern Loop.
5. Fiber Type: ecosolution Q100 Nylon.
6. Dye Method: Solution dyed.
7. Tufted Weight: 14 oz./sq.yd.
8. Pile thickness: 0.112 inch.
9. Gauge: 1/10 inch.
10. Stitches: 11 per inch.
11. Backing: Ecoworx.
12. Size: 24 by 24 inches.
13. Performance Characteristics: As follows:
 - a. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm.
 - b. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
 - c. Dimensional Stability: 0.10 percent or less per ISO 2551 (Aachen Test).
 - d. Colorfastness to Light: Not less than 4 after 60 AFU (AATCC fading units) per AATCC 16, Option E.
 - e. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria; not less than 1-mm halo of inhibition for gram-negative bacteria; no fungal growth; per AATCC 174.
 - f. Electrostatic Propensity: Less than 3.0 kV per AATCC 134.
 - g. CRI Indoor Air Quality Control Green Label Plus certified.

2.2 INSTALLATION ACCESSORIES

- A. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 2. Provide manufacturer's recommended trowel-applied, full-spread, high moisture adhesive for each flooring product specified as required to maintain manufacturer and installer warranty requirements. Comply with manufacturer's requirements for installation on porous or non-porous substrates, and for maximum relative humidity and alkalinity in accordance with testing procedures indicated.
- B. Resilient Transition Strips: Vinyl, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.
1. Comply with Division 09 Section "Resilient Base and Accessories" for resilient moldings.

2.3 SUBSTRATE PREPARATION

- A. Primer: ASTM C1059, Type I, latex formulation for use with underlayments.
1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Ardex; P 51 Primer.
 - b. Koster; VAP 1-06.
 - c. Laticrete; NXT Primer.
 - d. MAPEI Corporation; Primer T for underlayments.
- B. Underlayment: ASTM A118.4, 5000 psi compressive strength at 28 days; trowel applied cementitious underlayment for filling holes, depressions, and damaged areas of concrete slabs; and for providing sloped transitions at stone thresholds.
1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Ardex; SD-P.
 - b. Koster; Repair Mortar.
 - c. Laticrete; NXT Patch.
 - d. MAPEI Corporation; Mapecem Quickpatch.
- C. Self-Leveling Underlayment: ASTM C109, minimum 4,200 psi compressive strength at 28 days; cementitious powder mixed with water to produce a free-flowing self-leveling underlayment for rapid leveling of concrete slabs that have been shot-blasted and/or with depressions of up to 1-inch depth.
1. Product: Subject to compliance with requirements, provide one of the following:

- a. Ardex; K 15.
- b. Koster; LevelStrong.
- c. Laticrete; NXT Level Plus.
- d. MAPEI Corporation; Novoplan 2 Plus.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform relative humidity test using in situ probes, in accordance with ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement, or up to the manufacturer's allowed limit for the installed products.
 - b. Concrete slab substrates for testing should be at service temperature and relative humidity expected during normal use or at the conditions required for installation of a floor covering material in accordance with manufacturer's written installation instructions for at least 48 hours before making relative humidity measurements.
 - c. Perform three tests for the first 1,000 square feet and at least one additional test for each additional 1,000 square feet.
 5. Porosity Testing: Perform tests as follows prior to installation of flooring.
 - a. Perform water absorption testing in accordance with ASTM F 3191 to determine if the substrate surface is porous or non-porous.
 - b. Substrate and ambient temperature: 75 +/- 10 degrees F.
 - c. Ambient humidity: 50 +/- 10 percent relative humidity.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Prime all existing concrete surfaces. Allow primer to dry for 2 to 3 hours at 70 deg F, but not more than 24 hours before installation of underlayment. Areas of primer that have dried for more than 24 hours must be re-primed prior to application of underlayment. Comply with manufacturer's written recommendations and the following:
 - 1. Primer: Pour, mop or spray primer onto the surface. Apply an even thickness of primer to the prepared substrate using a bristle broom. Remove any puddles or thick areas.
 - 2. Underlayment: Apply underlayment to existing holes, depressions, and cracks in substrate as required for preparation of installation of self-leveling underlayment.
 - 3. Self-Leveling Underlayment: Prime surface and install self-leveling underlayment within 24 hours. Pour or pump self-leveling underlayment over the primed substrate and spread with a spike roller or gauging rake. Use a smoothing paddle to combine pours and to obtain a flat smooth surface.
 - a. Furnish and install self-leveling underlayment on all existing slabs to receive new flooring, including those that have had existing VAT, VCT and/or mastic removed by the shot-blast method.
 - 1) Floor preparation work includes installation of underlayment as required and self-leveling underlayment in 1/4-inch thickness, unless otherwise indicated.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.
- D. Clean metal substrates of grease, oil, soil and rust, and prime if directed by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
 - 1. Installation is not to begin until the HVAC system is operational, and the following conditions are maintained for at least 48 hours before, during and 72 hours after completion:
 - a. Ambient Temperature: Between 65 and 85 degrees F, unless otherwise stated by installed products manufacturer.

- b. Ambient Humidity: Between 35 and 55 percent, unless otherwise stated by installed products manufacturer.
- c. Substrate Temperature: Not less than 65 degrees F or more than 85 degrees F before, during and after installation, unless otherwise stated by installed products manufacturer.
 - 1) Do not install flooring unless substrate temperature is at least 5 degrees above dew point with temperature rising.
- B. Installation Method: As indicated on Material List, or as recommended in writing by carpet tile manufacturer.
- C. Maintain dye lot integrity. Do not mix dye lots in same area.
- D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. Install pattern parallel to walls and borders.
- H. Transition carpet tiles to epoxy-resin terrazzo flooring metal divider strip, in 3/8 inch depth, to provide sloped transition not greater than 2:1 slope.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI 104, Section 16, "Protection of Indoor Installations."
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 09 6813

SECTION 09 9100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following substrates:
 - 1. Hollow metal frames.
 - 2. Gypsum board.
- B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts, conduit, hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Prefinished items include the following factory-finished components:
 - a. Architectural casework.
 - b. Finished mechanical and electrical equipment.
 - c. Light fixtures and wiring devices.
 - d. Distribution cabinets in closets or equipment rooms.
 - 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Furred areas.
 - b. Ceiling plenums.
 - c. Pipe spaces.
 - d. Duct shafts.
 - 3. Finished metal surfaces include the following:
 - a. Anodized or coated aluminum.

- b. Stainless steel.
 - c. Chromium plate.
 - d. Copper and copper alloys.
 - e. Bronze and brass.
4. Operating parts include moving parts of operating equipment and the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
 5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- D. Related Sections include the following:
1. Division 08 Section "Hollow Metal Frames" for factory primed hollow metal frames to be field finished by this Section.
 2. Division 09 Section "Gypsum Board Assemblies" for surface preparation of gypsum board.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
 3. Certification by the manufacturer that products supplied comply with State of Rhode Island Ozone Transportation Commission (OTC) regulations controlling use of volatile organic compounds (VOCs).

- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Qualification Data: For firms and persons specified in the “Quality Assurance” Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.
- D. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. VOC content.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For coatings to include in maintenance manuals. Include the following:
 - 1. Area summary with Finish Schedule and area detail designating where each product, color, and finish is used.
 - 2. Product data pages.
 - 3. Material safety data sheets.
 - 4. Care and cleaning instructions.
 - 5. Touch-up procedures.
 - 6. Color samples of each color and finish (gloss level) used.
- B. Manual: Provide Sherwin Williams; “Custodian Project Color and Product Information” manual, or equal.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional 1 gallon of each material and color applied.

1.7 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

- B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Wall Surfaces: Provide samples of at least 100 sq. ft.
 2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
 3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.
 4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.9 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Benjamin Moore & Co.
 2. PPG Industries Inc. (PPG).
 3. Sherwin-Williams Company.

2.2 PAINT, GENERAL

- A. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content for Interior Paints and Coatings:
1. All interior paints and coatings shall comply with the VOC content regulations of the Ozone Transportation Commission (OTC) effective in the State of Rhode Island. For interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - a. Flat Coatings: 100 g/L.
 - b. Nonflat Coatings: 150 g/L.
 - c. Nonflat-High Gloss Coatings: 250 g/L.
 - d. Primers, sealers and undercoaters: 200 g/L.
- C. Colors: As indicated, or as selected by Architect / Owner from manufacturer's full range.

2.3 INTERIOR PRIMERS

- A. General: Provide tinted primers as required for dark colors.
- B. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application (**100 g/L**).
1. Benjamin Moore, Ultra Spec 500 Interior Latex Primer N534: Applied at a dry film thickness of not less than 1.8 mils.
 2. PPG; 6-2 Speedhide Interior Latex Sealer Quick-Drying: Applied at a dry film thickness of not less than 1.0 mil.

3. Sherwin-Williams; ProMar 200 Zero VOC Primer B28W2600: Applied at a dry film thickness of not less than 1.5 mils.

C. Interior Metal Primer: Factory-formulated metal primer (**250 g/L**).

1. Benjamin Moore; Ultra Spec HP DTM Acrylic Metal Primer No. HP04: Applied at a dry film thickness of not less than 1.7 mils.
2. PPG; Pitt-Tech Plus 4020 PF: Applied at a dry film thickness of not less than 2.2 mils.
3. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Acrylic Primer B66 Series: Applied at a dry film thickness of not less than 2.0 mils.

2.4 INTERIOR PAINTS

A. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel for walls (**100 g/L**).

1. Benjamin Moore, Ultra Spec 500 Interior Eggshell T538: Applied at a dry film thickness of not less than 1.8 mils.
2. PPG; 6-411 Series Speedhide Interior Enamel Latex Eggshell: Applied at a dry film thickness of not less than 1.5 mils.
3. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Egg-Shell Enamel B20-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.

B. Interior Semi-Gloss Acrylic Enamel for Metal Surfaces: Factory-formulated semi-gloss acrylic interior enamel (**250 g/L**).

1. Benjamin Moore; Ultra Spec HP DTM Acrylic Semi-Gloss Enamel HP29: Applied at a dry film thickness of not less than 1.5 mils.
2. PPG; Pitt-Tech Plus EP DTM Acrylic 90-1610 Semi-Gloss: Applied at a dry film thickness of not less than 2.0 mils.
3. Sherwin-Williams; Pro Industrial Acrylic B66 Series Semi-Gloss: Applied at a dry film thickness of not less than 2.5 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 1. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

- D. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.
- E. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.
- F. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove hardware, plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Tanks that do not have factory-applied final finishes.
 - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 2. Paint the following work where exposed in occupied spaces:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - h. Other items as directed by Architect.
 3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
1. Low-Luster Acrylic-Enamel Finish (Walls and Soffits): Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- B. Ferrous and Zinc-Coated Metal: Provide the following finish systems over ferrous metal:
1. Semi-Gloss Acrylic-Enamel Finish: Two finish coats over a metal primer.
 - a. Primer: Metal primer, including surfaces with factory prime coat.
 - b. Finish Coats: Interior semi-gloss acrylic enamel for metal surfaces.

END OF SECTION 09 9100

SECTION 10 1400 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. University of Rhode Island Academic Signage Standard dated 092024 (see Attachment A)

1.2 SUMMARY

- A. This Section includes:
 - 1. Panel signs.
 - 2. Vinyl graphic film.
- B. Related Sections include the following:
 - 1. Division 01 Section "Temporary Facilities and Controls" for temporary Project identification signs and for temporary information and directional signs.
 - 2. Division 23 Mechanical Sections for labels, tags, and nameplates for mechanical equipment.
 - 3. Division 26 Electrical Sections for labels, tags, and nameplates for electrical equipment.
 - 4. Division 26 Section for illuminated exit signs.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show the following:
 - 1.
 - 2. Include fabrication and installation details and attachments to other work
 - 3. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
 - 4. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
 - 5. Provide vector images or other digital media that may be required to enlarge small format logos, images, symbols, etc. furnished by Architect for application on all sign types including project identification and temporary signs included in Division 01 Section "Temporary Facilities and Controls."
 - 6. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
 - 7. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
- C. Samples for Initial Selection:
 - 1. Include representative Samples of typestyles and graphic symbols as indicated in the

University of Rhode Island Academic Signage Standard dated 092024 (see Attachment A)

- D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:
 - 1. Panel Signs: Not less than 12 inches square.
- E. Sign Schedule: To be developed by the fabricator in conjunction with the University of Rhode Island Project Manager.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualifications Data: For fabricator.
- B. Warranty: Special warranty specified in this Section

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of the sign manufacturer.
- B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance,
- C. Handicapped Accessibility Guidelines: Comply with the handicapped accessibility requirements of ICC/ANSI A117.1 and the 2010 ADA Standards.

1.7 COORDINATION

- A. Comply Coordinate placement of anchorage devices with templates for installing signs.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL SIGNS

- A. Custom signs based on the University Standards
- B. Interior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner, complying with the following requirements:
 - 1. Provide manufacturer's standard one-piece construction:
 - a. Phenolic-Backed Photopolymer Sheet: Provide light-sensitive, water-wash photopolymer face layer bonded to a phenolic base layer to produce a composite sheet with overall, face-layer, and base-layer thickness of 1/8-inch; and a Type D Shore durometer hardness of 80.
 - 2. Edge Condition: Square cut.
 - 3. Corner Condition: Square.
 - 4. Mounting: Unframed.
 - a. Wall mounted with mechanical fasteners or two-face tape required by substrate.
 - 5. Pictograms: Accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram to be no less than 6 inches in height.
 - 6. Finish and Contrast: Characters, symbols and background to be matte or other non-glare finish. Characters and symbols to be in contrasting color to the background; either light characters on a dark background or dark characters on a light background.
 - 7. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch above surface with contrasting colors. Glue-on characters or etched backgrounds are not permitted.
 - a. Manufacturer's standard process for producing text and symbols complying with ICC/ANSI A117.1 and 2010 ADA Standards. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.
 - b. Braille to be separated from corresponding raised characters or symbols by 1/2-inch.
 - c. Changeable Message Inserts: Fabricate signs to allow insertion of changeable messages in the form of transparent covers with paper inserts printed by Owner.

2.2 VINYL GRAPHIC FILM

- A. Vinyl Graphic Film
 - 1. Basis of Design Product: Subject to compliance with requirements, provide the following, or equal:
 - a. 3M; Scotchcal ElectroCut Graphic Film Series 7125
 - b. Thickness: 2 mils.
 - c. Surface Finish: Matte.

2.3 ACCESSORIES

- A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors.
- B. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:
 - 1. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Furnish two blank inserts for each sign for Owner's use.

2.4 FINISHES, GENERAL

- A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- B. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting performance of signage work.
- C. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated
- D. Verify that anchor inserts are correctly sized and located to accommodate signs.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

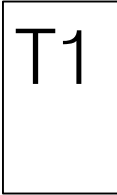
- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
 - 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

4. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls.
 - a. Locate top of sign at height indicated on Drawings, with tactile characters 48 inches minimum above finish floor. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
 1. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
 2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.
 - a. Mount signs to glass only. Do not use this method for any other substrate.
 3. Signs Mounted on Glass: Provide matching opaque plate on opposite side of glass to conceal mounting materials.
- C. Field-Applied, Vinyl-Character Signs: Clean and dry substrate. Align sign characters in final position before removing release liner. Remove release liner in stages, and apply and firmly press characters into final position. Press from the middle outward to obtain good bond without blisters or fishmouths. Remove carrier film without disturbing applied vinyl film.

3.3 ADJUSTING AND CLEANING

- A. Perform Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 1400



Notes to Design Agents

Signs shall comply with all applicable codes and regulations. Fabricator shall be responsible to verify the current campus signage standards against all applicable codes and regulations. Please advise Owner of any revisions required due to recent adoptions or edits to codes and regulations.

Signage shall be mounted at heights prescribed in all applicable codes and regulations.

These drawings are for reference and should not be used as template files for manufacture of signs.

Typography

Arial Regular, a sans serif font, is to be utilized on all signage. Upper case font shall be used on all signage types except for no smoking and user created office name inserts.

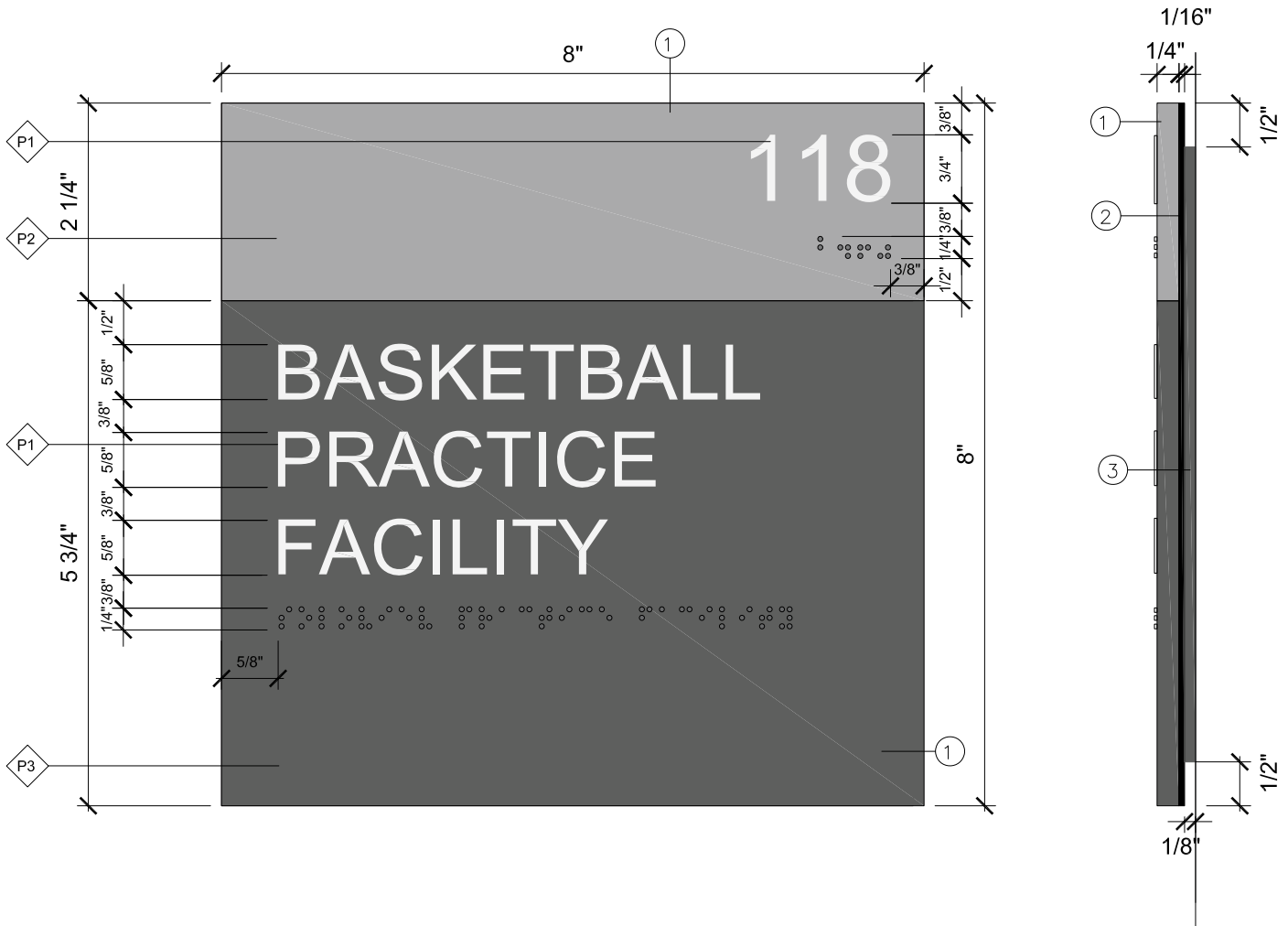
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

Section 10 1410 Attachment A

1A

Major Space sign - MULTIPLE Line Text / No name insert
Scale 6" = 1'=0"

Uses: Classrooms, Multi Purpose Rooms, Conference Rooms, Auditorium, Laboratories, etc.
Typography: Arial Regular. Upper case font.



- ①. 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ②. 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③. 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



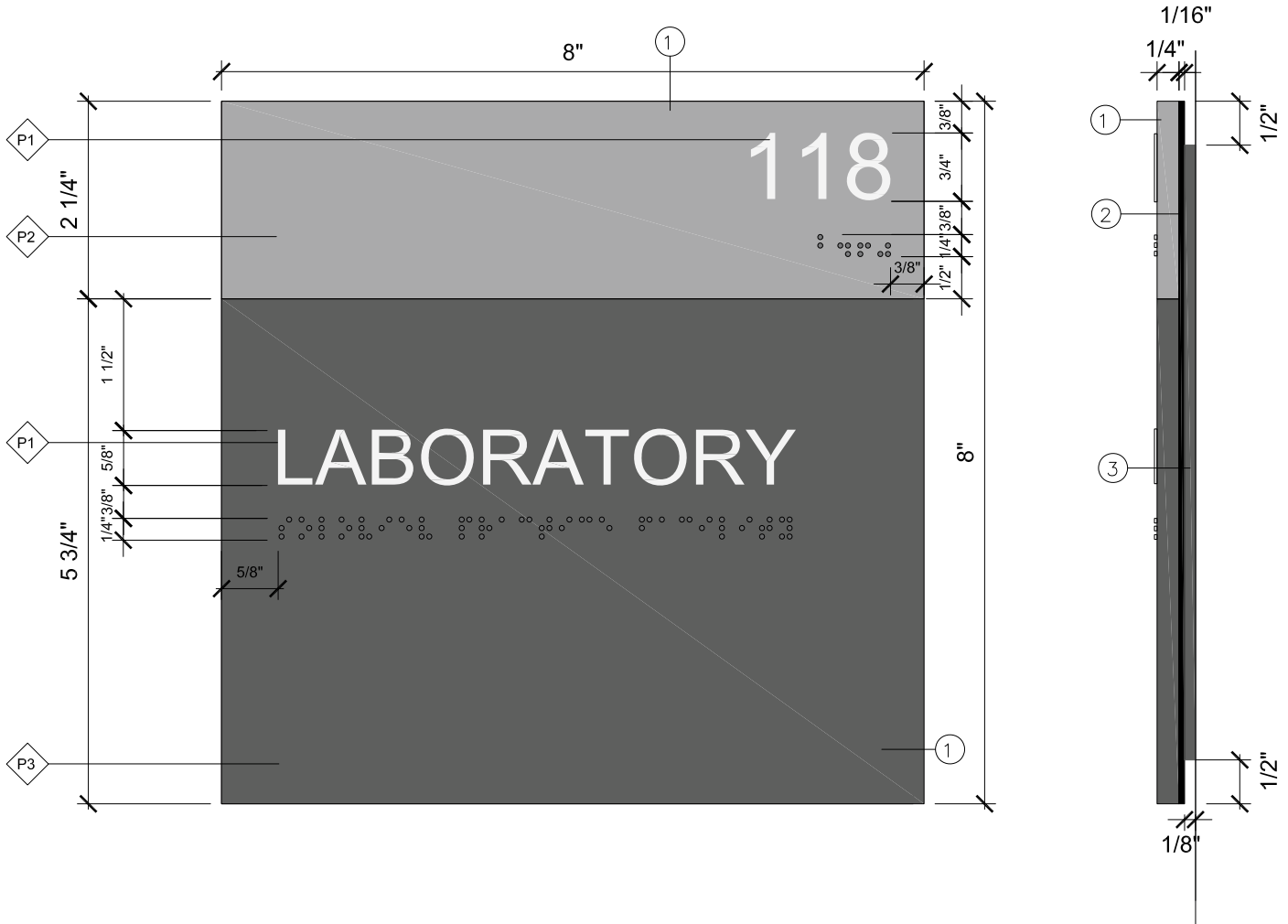
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OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

1B

Major Space sign - SINGLE Line Text / No name insert
Scale 6" = 1'=0"

Uses: Classrooms, Multi Purpose Rooms, Conference Rooms, Auditorium, Laboratories, etc.
Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.

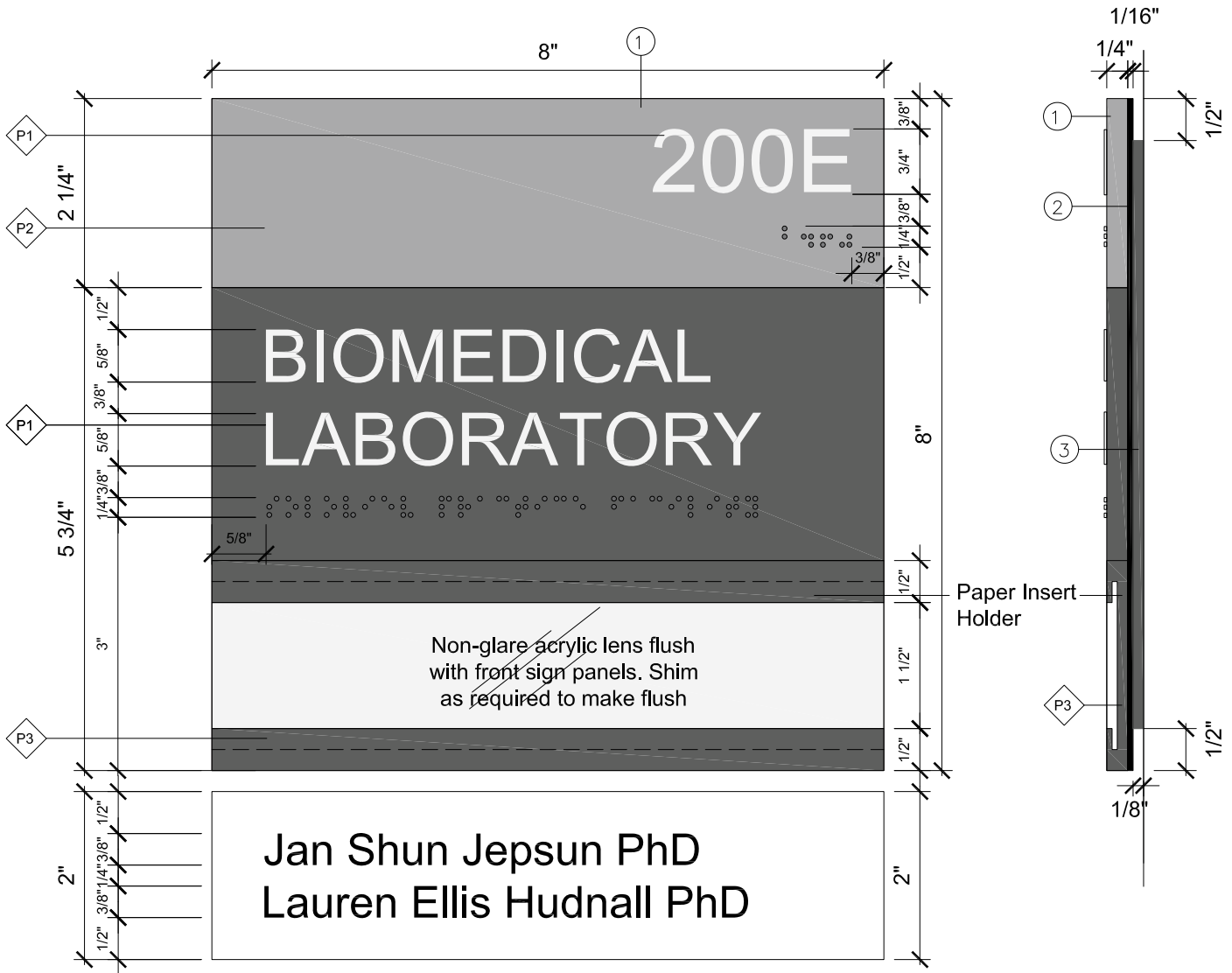
- P1 White. Matte non glare finish
- P2 Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish
- P3 Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

**Section 10 1410
Attachment A**

1C

Major Space sign - Single or Multiple Line WITH NAME INSERT
Scale 6" = 1'=0"

Uses: Multi Purpose Rooms, Laboratories, etc. WITH A NAMED OCCUPANT
Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



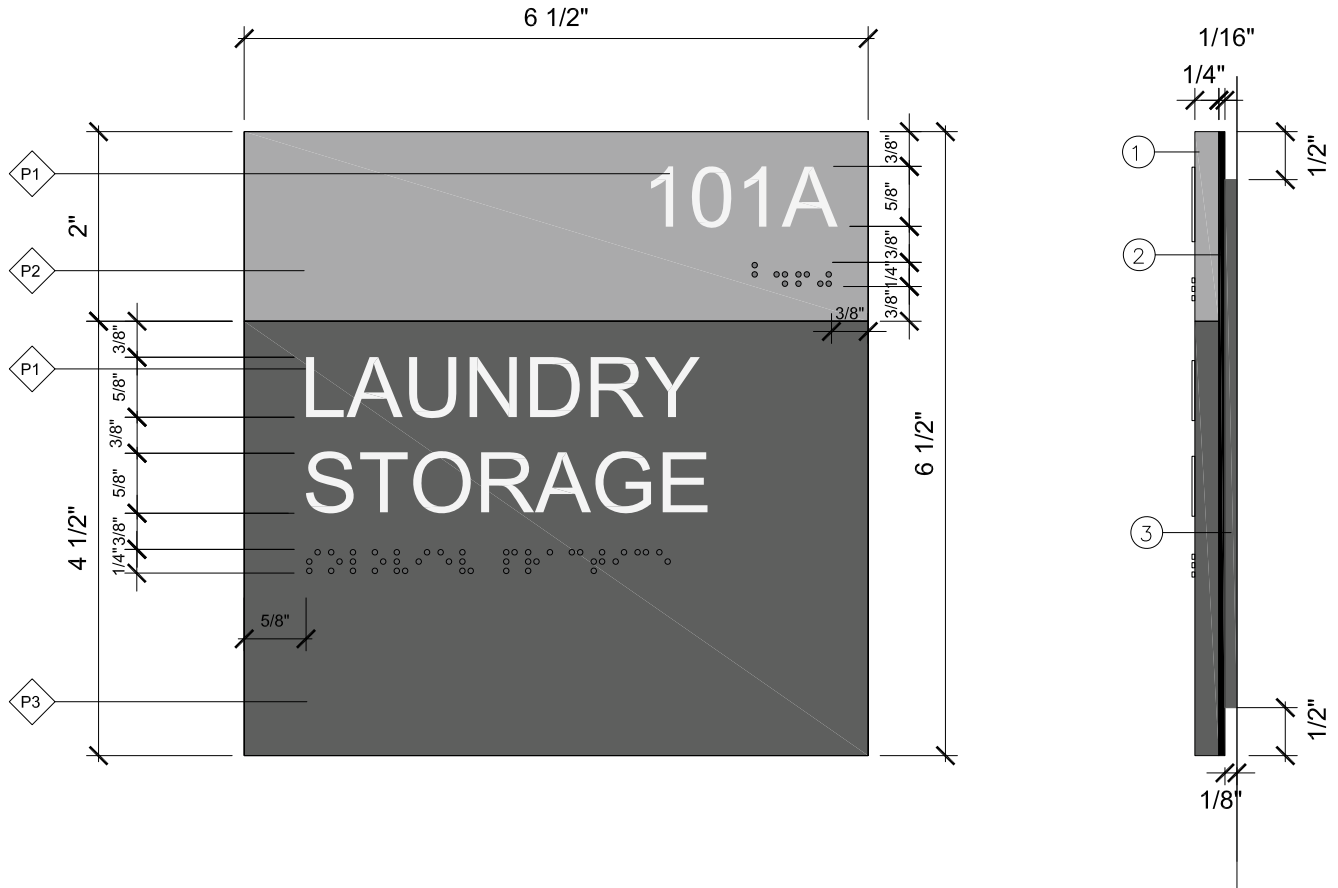
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

2A

Minor Space sign - MULTIPLE Line Text
Scale 6" = 1'=0"

Uses: Support spaces such as Storage, AV room, Study room, Student Lounge, Breakroom
Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



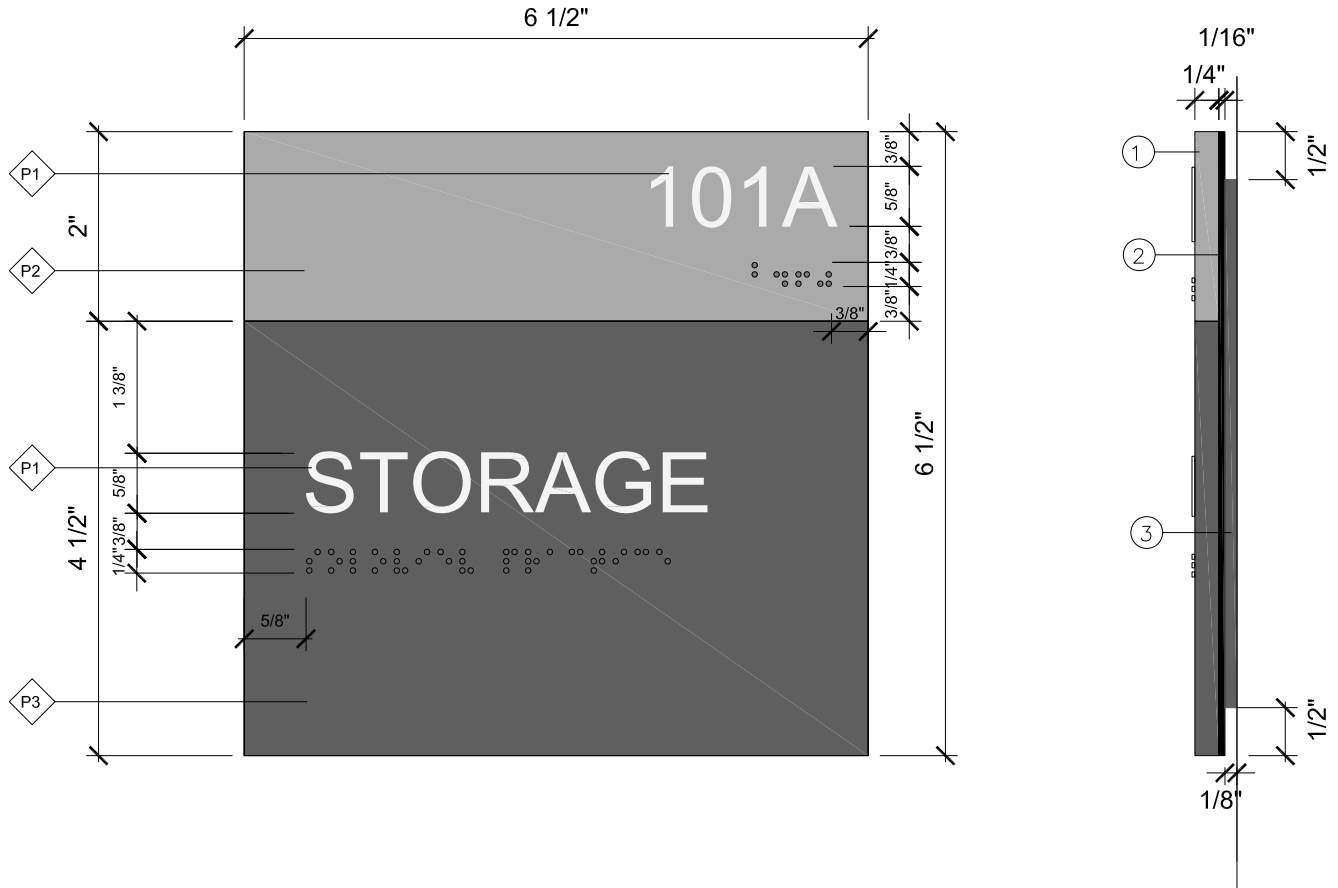
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

2B

Minor Space sign - SINGLE Line Text
Scale 6" = 1'-0"

Uses: Support spaces such as Storage, AV room, Study room, Student Lounge, Breakroom
Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
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- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



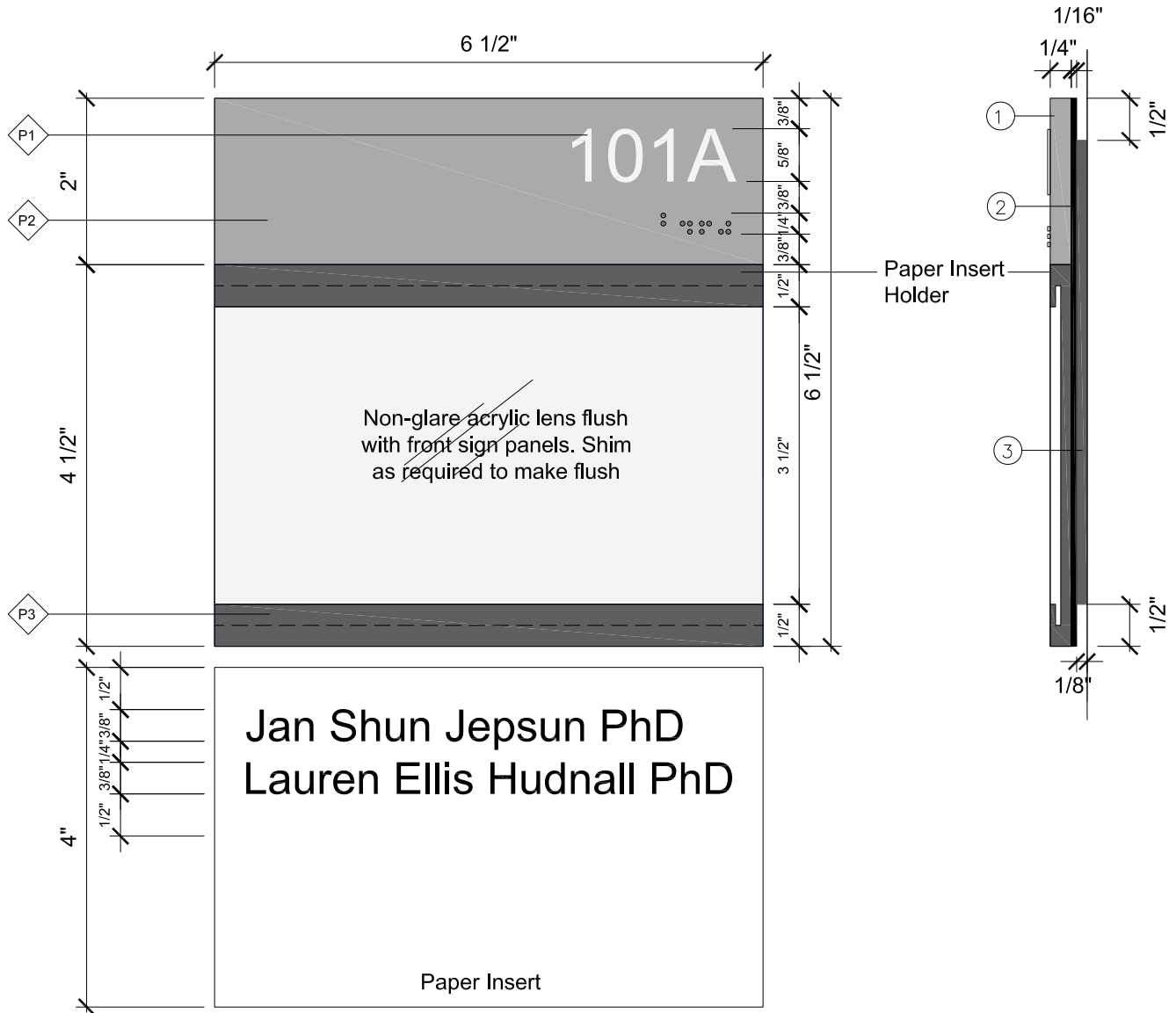
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

3

Office sign
Scale 6" = 1'=0"

Uses: Offices, Cubicle areas if required
Typography: Arial Regular. Upper case font.



① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate

② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2

③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



P1 White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



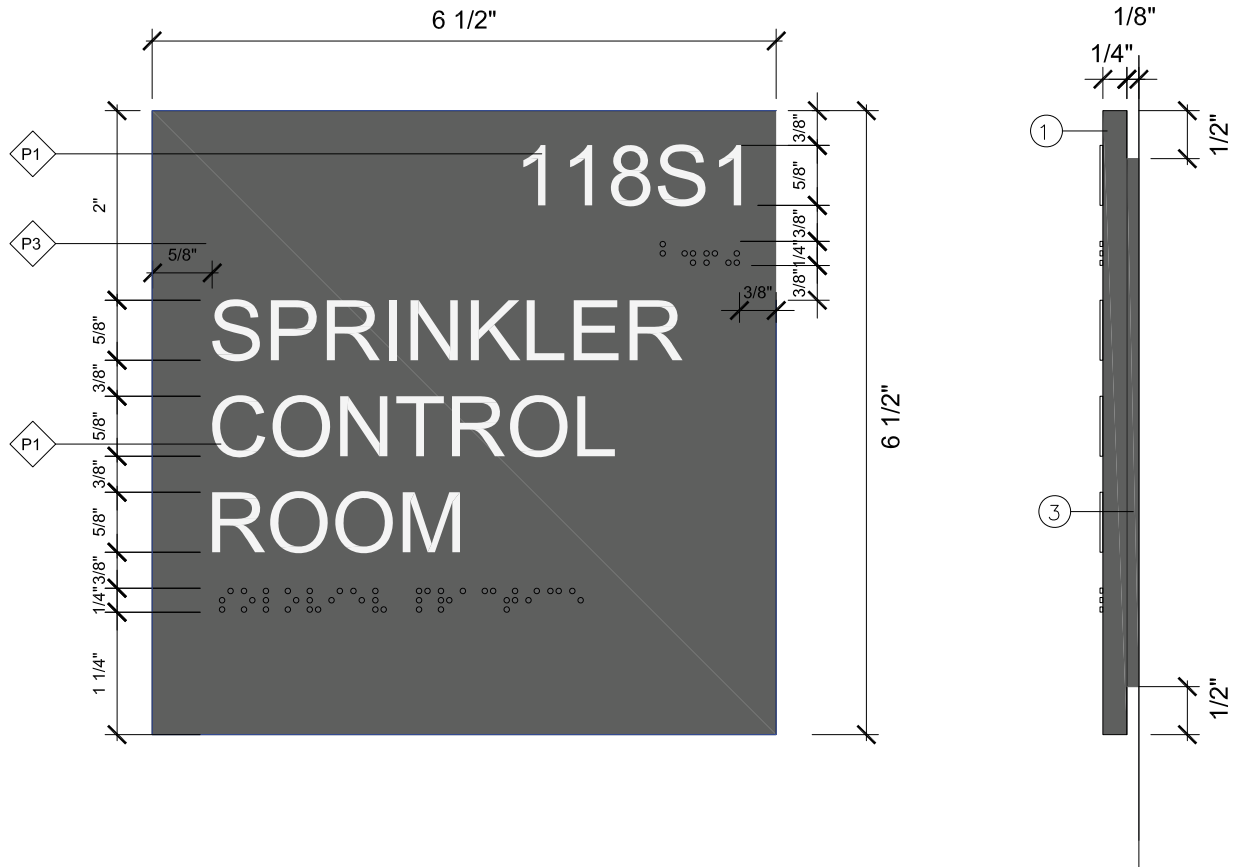
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

**Section 10 1410
Attachment A**

4

Mechanical Sign
Scale 6" = 1'-0"

Uses: All Mechanical rooms, Electrical closets, Tel Closets, Sprinkler Control rooms, Custodial closets
Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



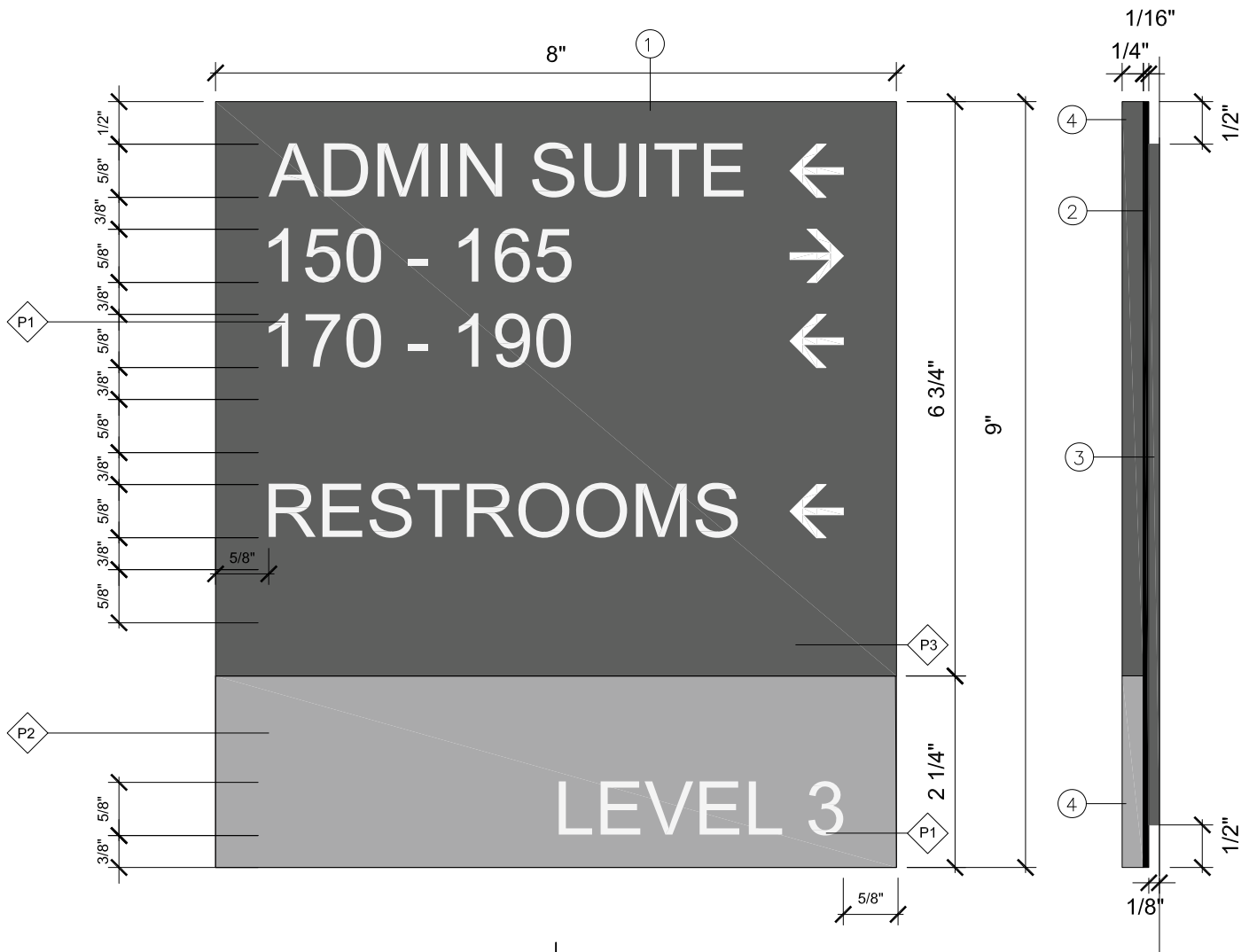
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

5

Directional Sign. Not required to be Tactile per ADA Chapter 216.3
Scale 6" = 1'=0"

Uses: Entry Corridor, Opposite Elevators, Direction to Restrooms and Accessible Access
Typography: Arial Regular. Upper case font.



② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2

③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.

④ 1/4" Individual acrylic panels with non tactile, direct print to face lettering, numbers and symbols with UV stable ink. Acrylic panels shall be surface painted on front and edges. 3M Bonding Film adhesive to back plate

NOTE: 6 lines of text are available. Start on line #2 if only using one or two lines of text for visual balance.
'LEVEL x' is optional but helpful when opposite elevator or stair entrances in multi storey buildings.

P1 White. Matte non glare finish

P2 Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish

P3 Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

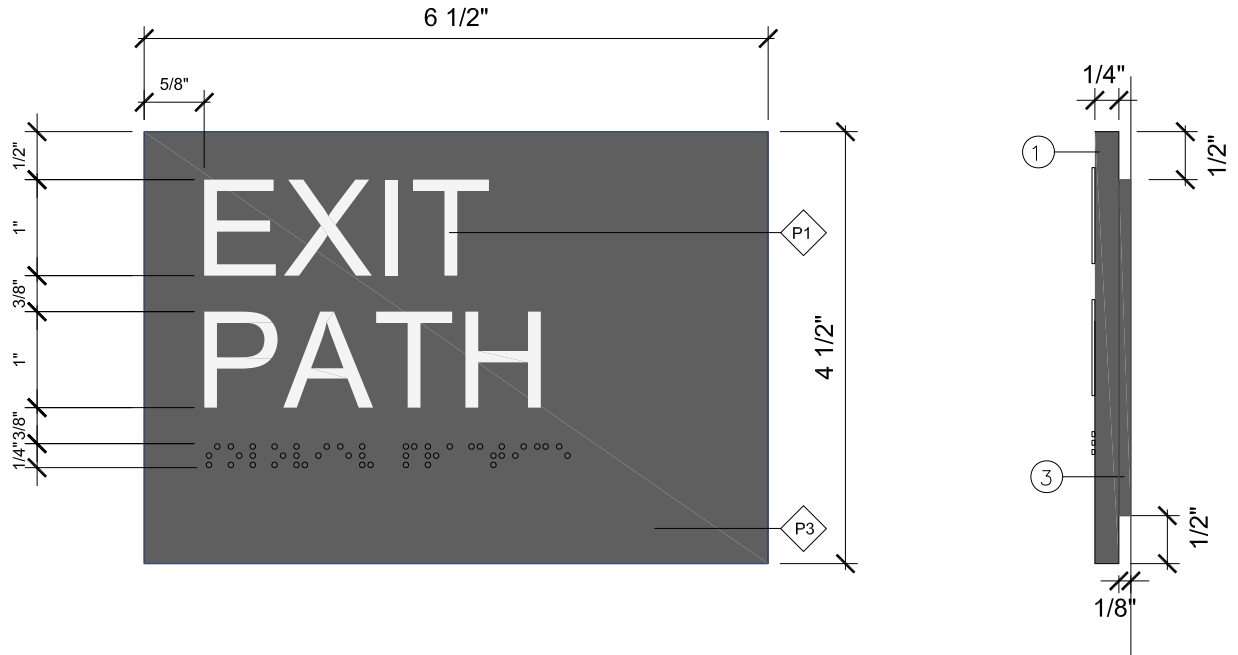
Section 10 1410 Attachment A

6A

EXIT PATH Sign
Scale 6" = 1'=0"

Uses: EXIT PATH Per ADA sect. 216.4.1

Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



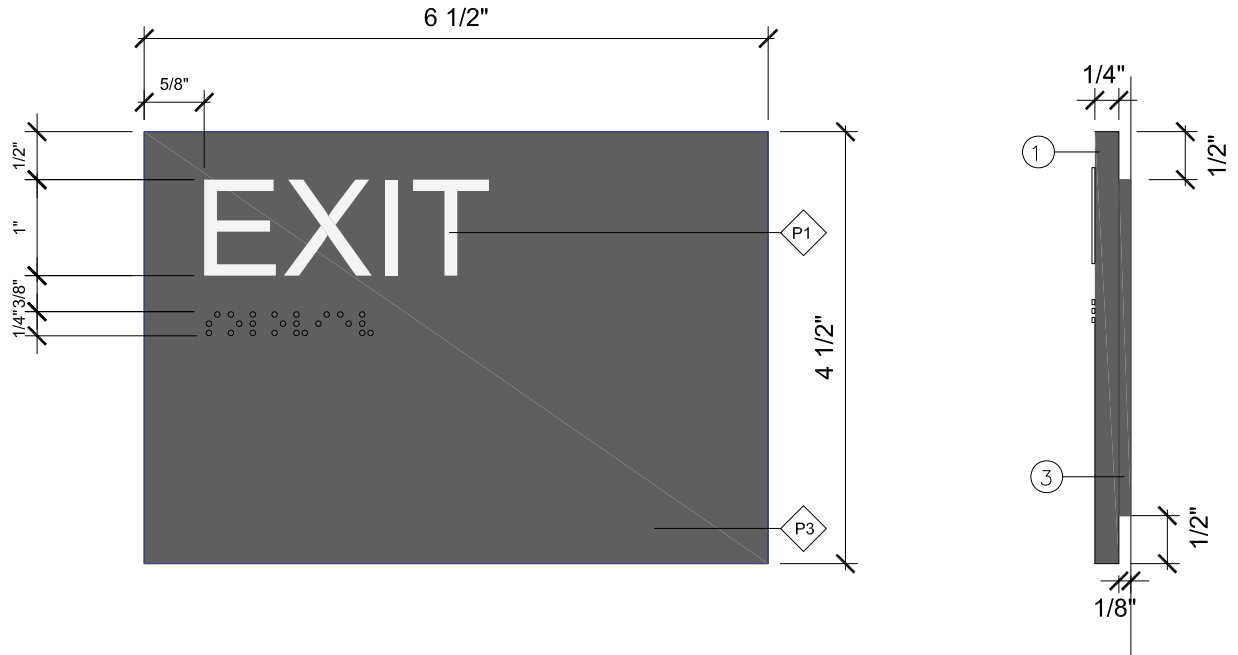
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

6B

EXIT Sign
Scale 6" = 1'=0"

Uses: EXIT per RI building code 2019 sect.1013.4
Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



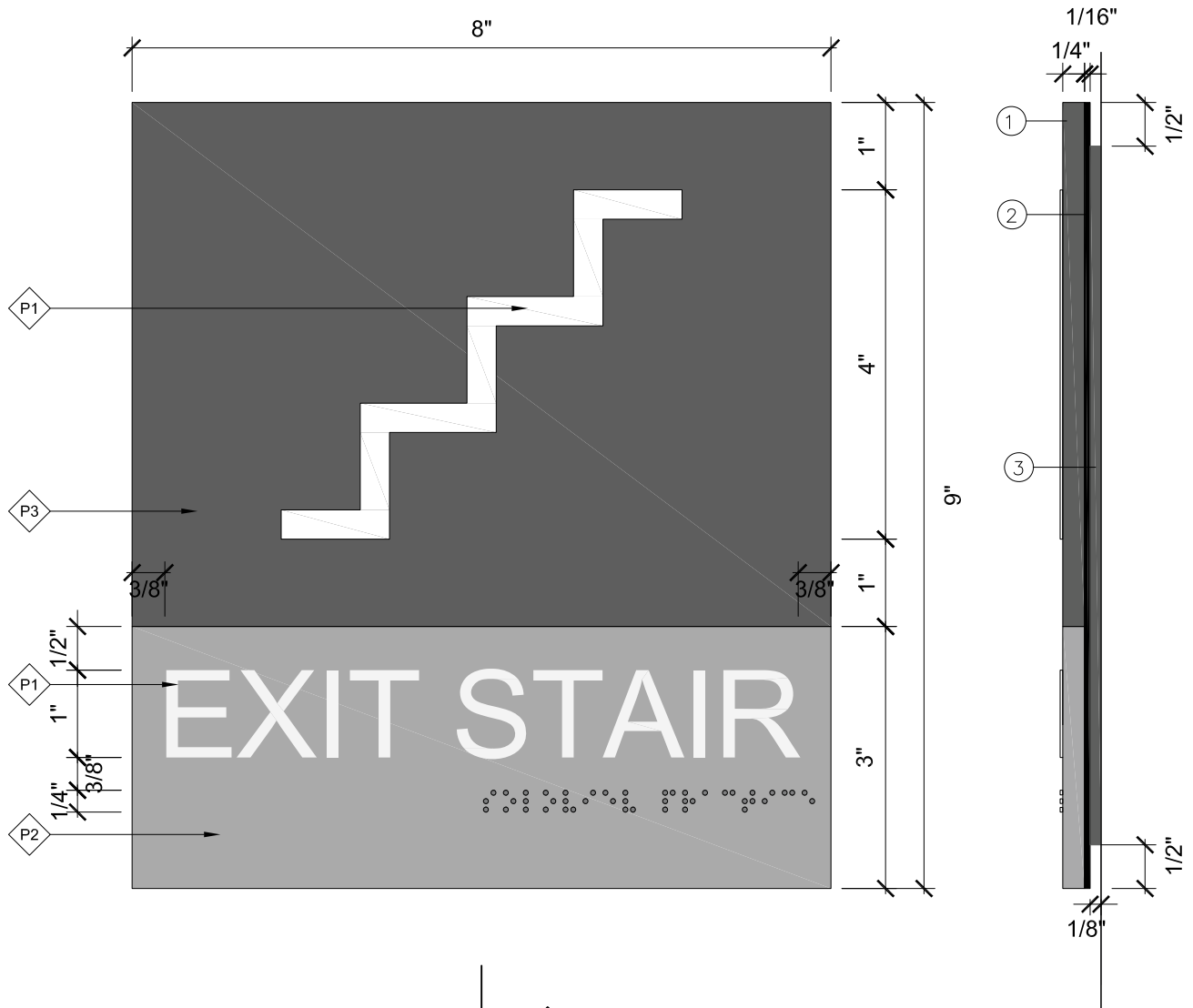
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

7

Exit Stair Sign
Scale 6" = 1'=0"

Typography: Arial Regular. Upper case font.



①. 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate

②. 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2

③. 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.

Note: Confirm with design agent if sign type 6B is preferred by current code.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



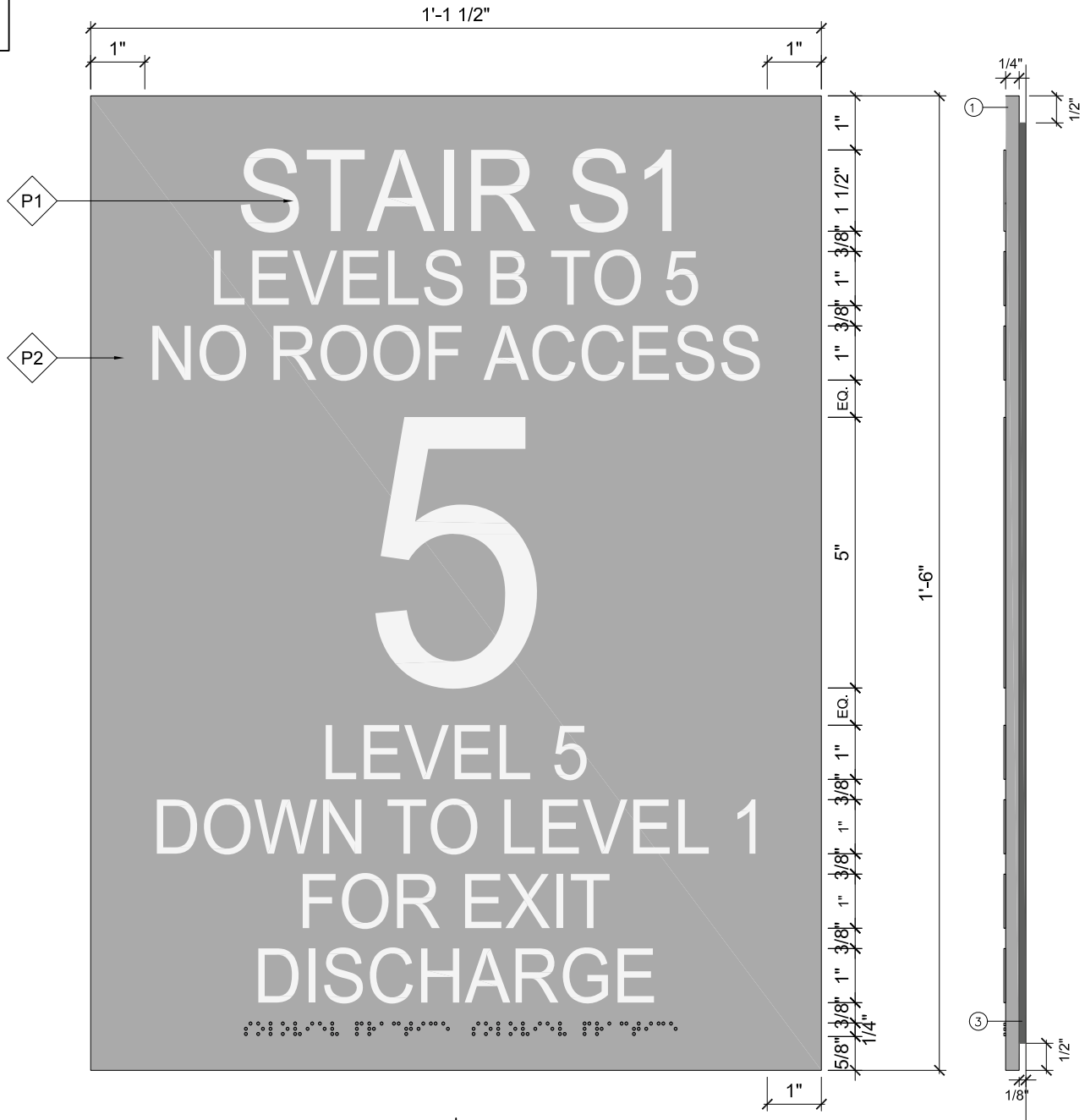
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

**Section 10 1410
Attachment A**

8

Stairwell Sign
Scale 4" = 1'=0"

Uses: Applies to all rooms labeled STAIR, to be applied inside of stairwell at each level
Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.

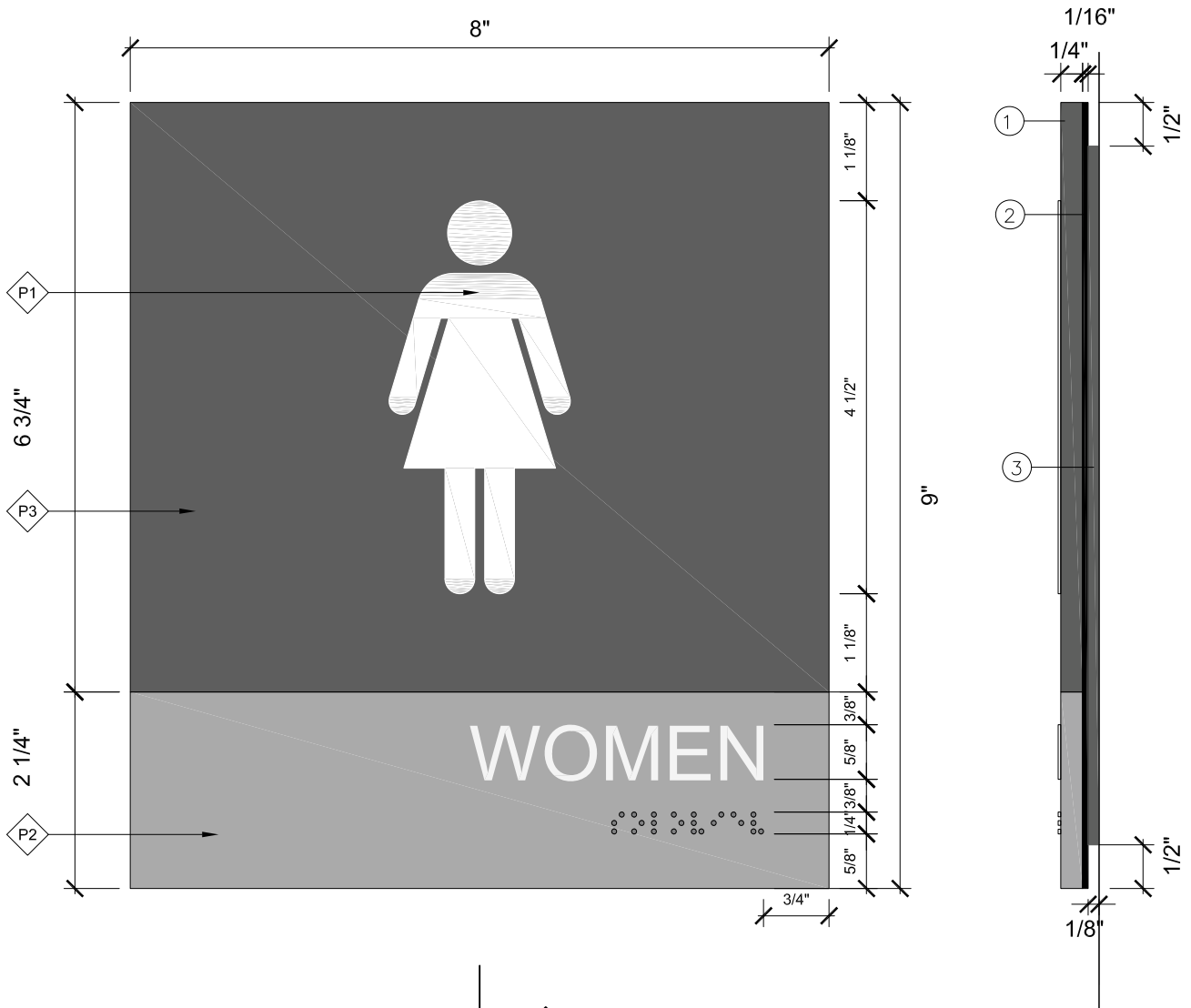
- P1 White. Matte non glare finish
- P2 Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish
- P3 Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

9A

Restroom Sign Women
Scale 6" = 1'=0"

Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



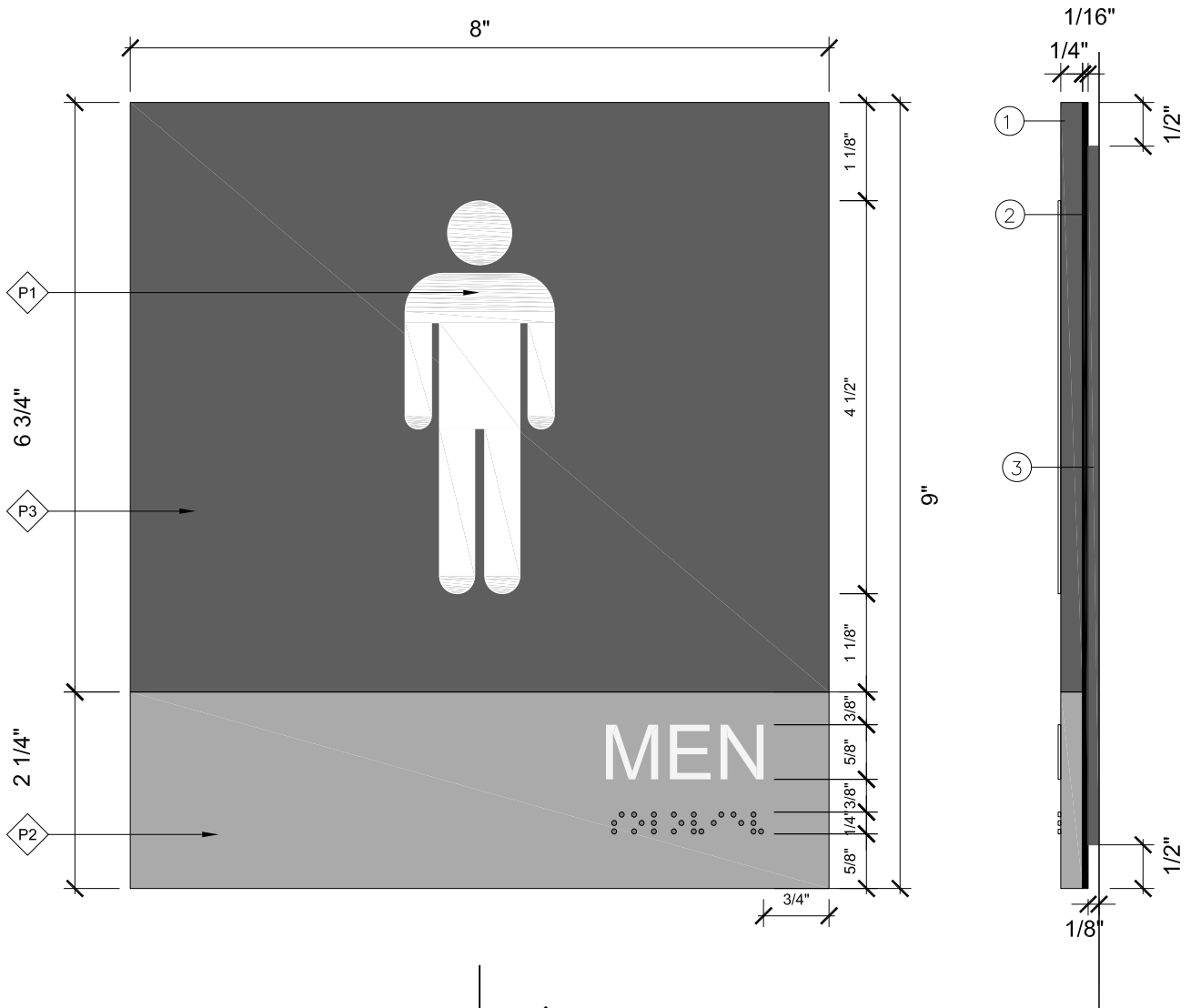
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

9B

Restroom Sign Men
Scale 6" = 1'=0"

Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



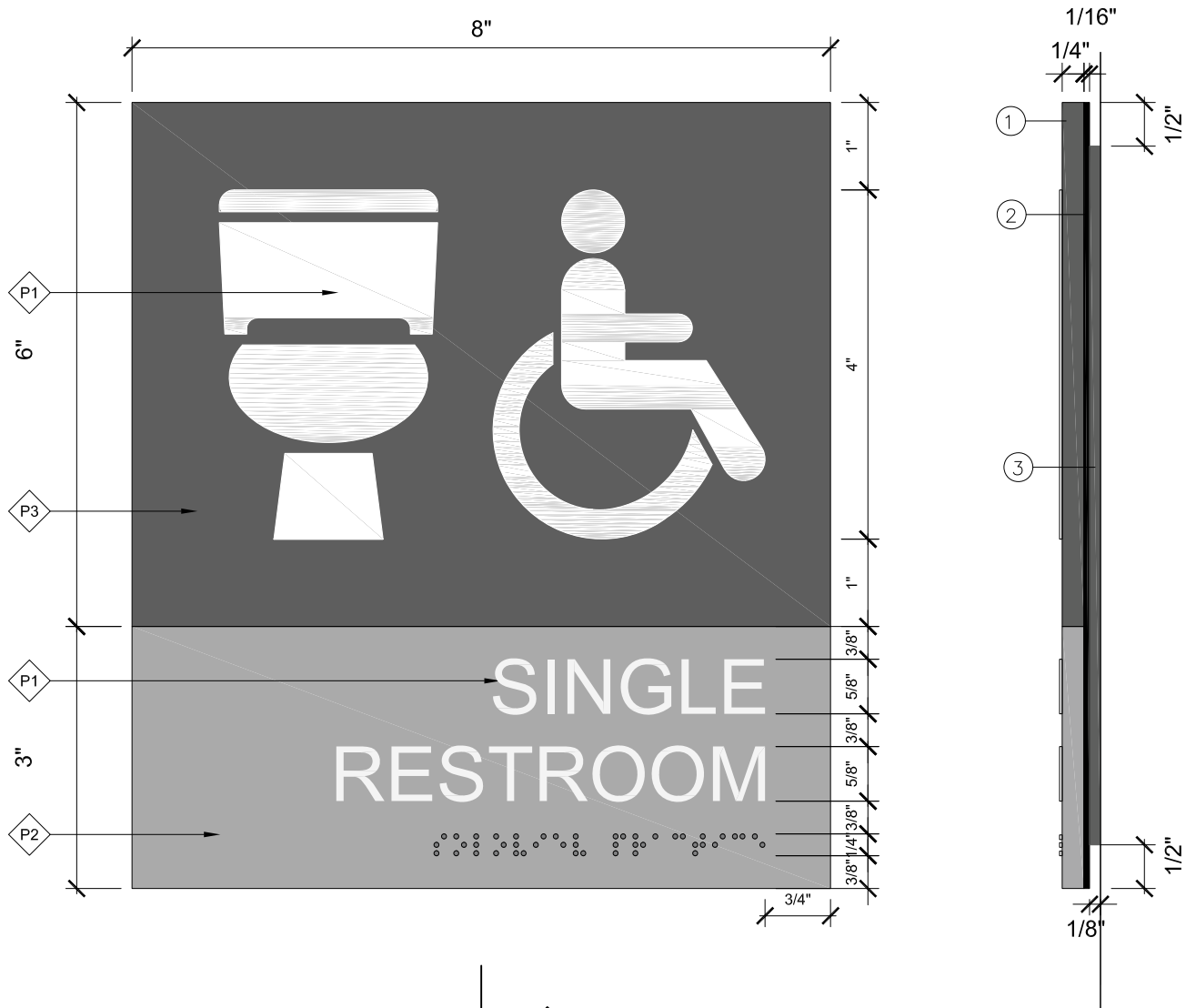
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

9C

Single Occupant Accessible Restroom Sign
Scale 6" = 1'=0"

Typography: Arial Regular. Upper case font.



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

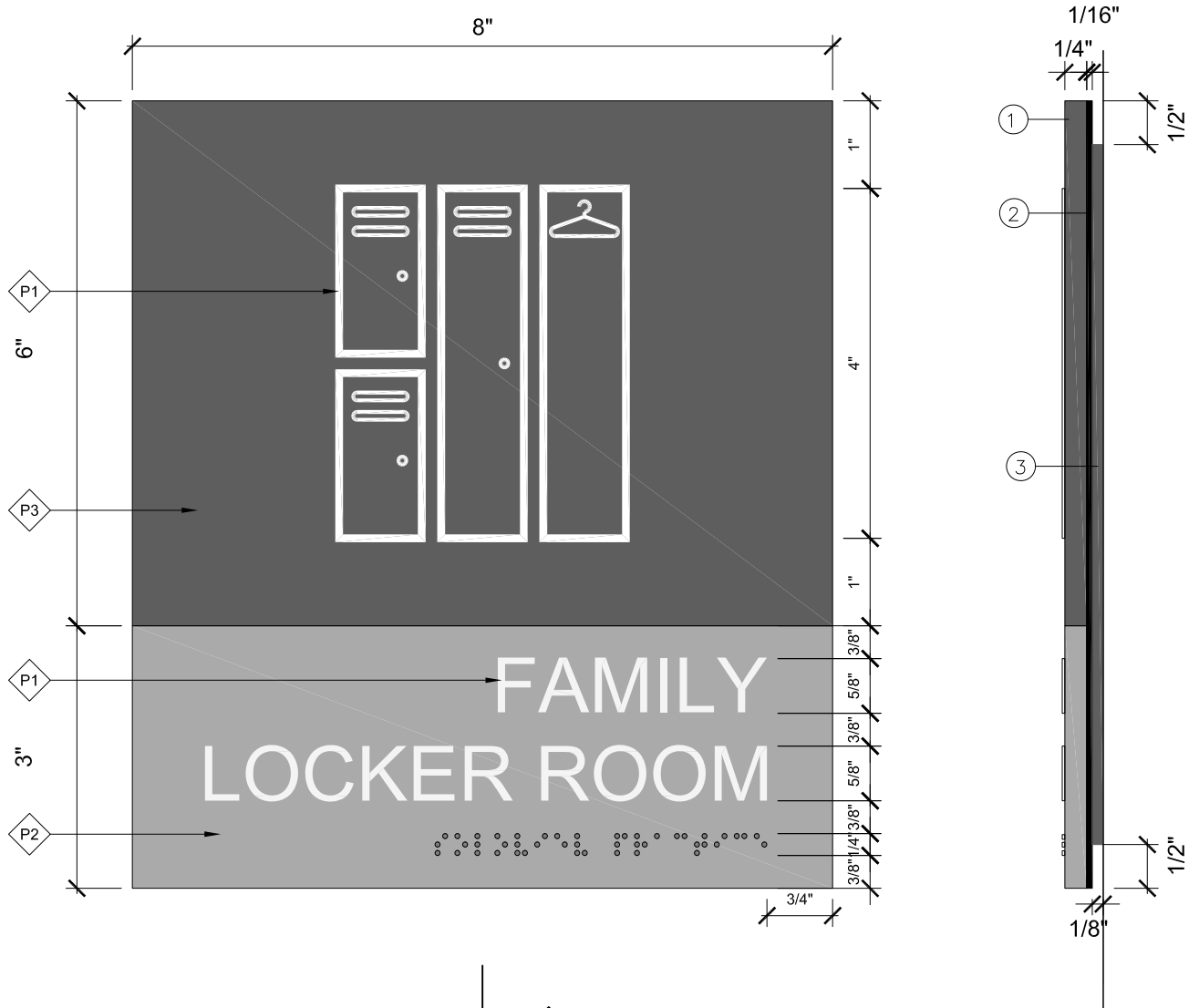
Section 10 1410 Attachment A

9E

Family Locker Room Sign

Scale 6" = 1'-0"

Typography: Arial Regular. Upper case font.



①. 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate

②. 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2

③. 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.

P1 White. Matte non glare finish

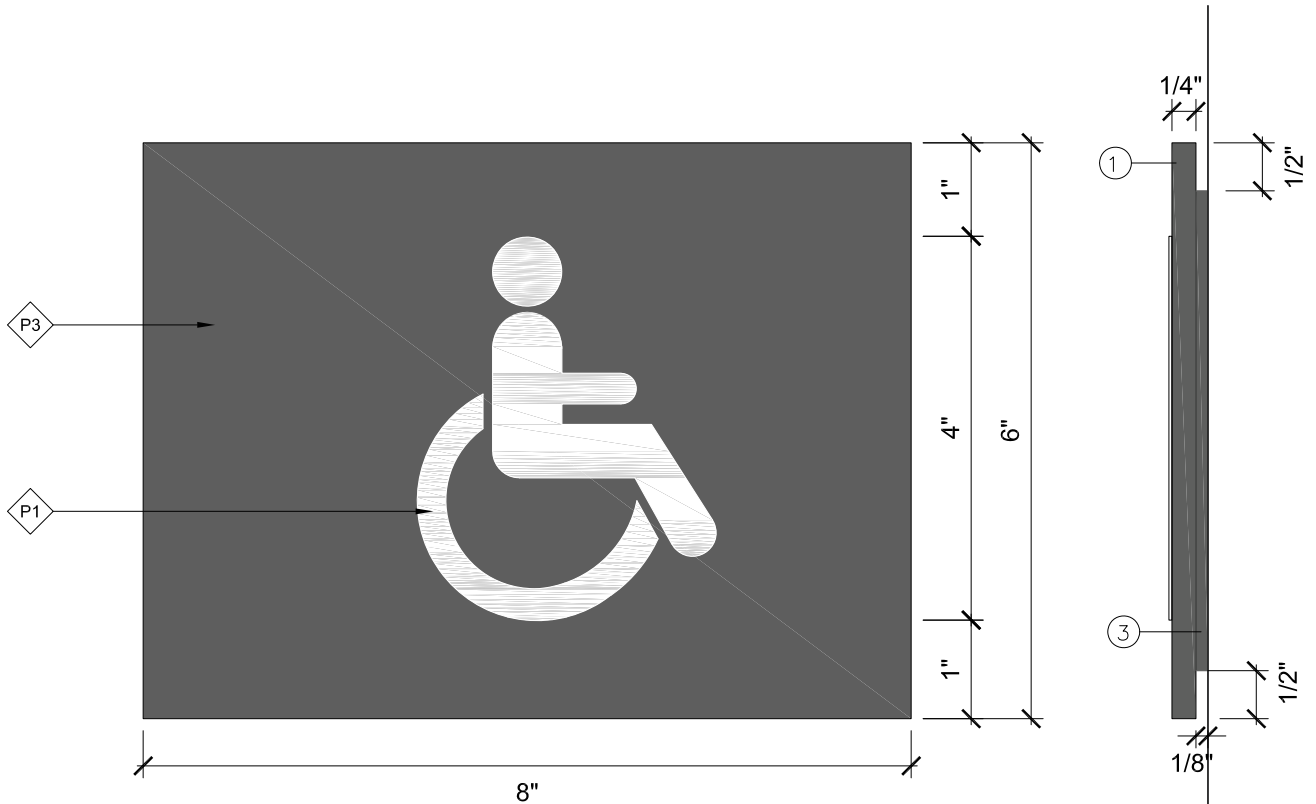
P2 Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish

P3 Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

10

Accessible Symbol
Scale 6" = 1'=0"



- ① 1/4" Photopolymer or Thermoformed Individual acrylic panels with ADA compliant 1/32" raised tactile lettering, numbers & pictograms. ADA Compliant Grade 2 Braille painted to match panel color. Smooth texture. Square edge. Surface painted front and edges. 3M Bonding Film adhesive to back plate
- ② 1/16" Acrylic back plate #1. Square edge. Black with black edges. 3M Bonding Film adhesive to back plate #2
- ③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

Section 10 1410 Attachment A

11

Elevator Emergency Sign. Use Per 2021 International Fire Code (IFC) 604.4
Scale 6" = 1'-0"

Typography: Arial Regular. Upper case font. Informational Pictogram ADA 703.6. Non Raised Pictogram. No Tactile Text. No Braille.



③ 1/8" Acrylic back plate #2 to create standoff from wall. Square edge. Black. 1/2" smaller than back plate #1.

④ 1/4" Individual acrylic panels with non tactile, direct print to face lettering, numbers and symbols with UV stable ink. Acrylic panels shall be surface painted on front and edges. 3M Bonding Film adhesive to back plate



White. Matte non glare finish



Rowmark ADA Alternative 3X1-331 (Grey Flannel)
OR equal to:
CMYK 54,48,45,12, RGB 120,117,118,
Matte non glare finish



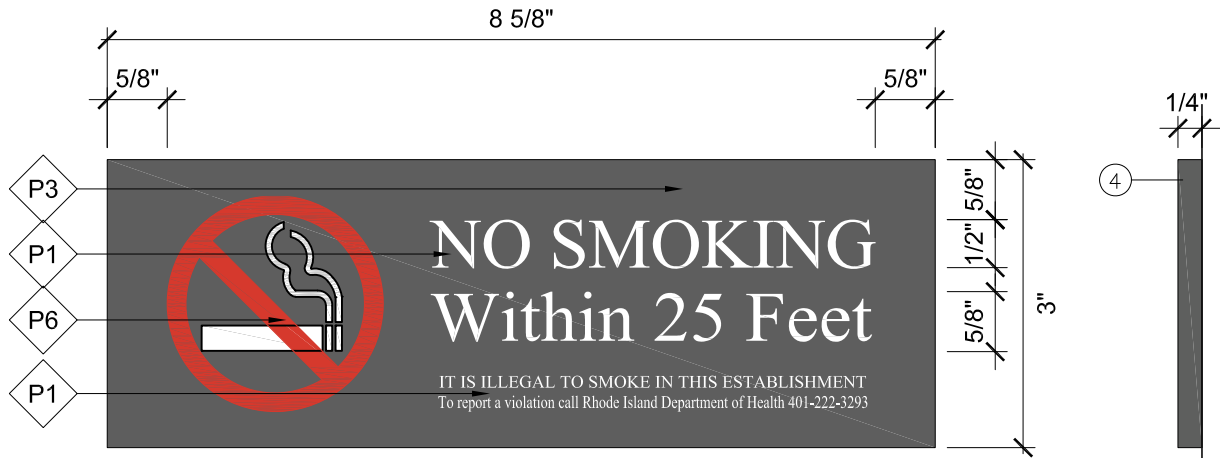
Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

**Section 10 1410
Attachment A**

**12
A**

No Smoking Sign
Scale 6" = 1'=0"

Typography: Arial Regular. Upper and lower case fonts. Informational Pictogram ADA 703.6. Non Raised Pictogram. No Tactile Text. No Braille.



**12
B**



For glass application: Reverse printed on clear vinyl. Front adhesive, mount from inside.

④ 1/4" acrylic panel with non tactile, direct print to face lettering, numbers and symbols with UV stable ink. Acrylic panel shall be surface painted on front and edges.

⑤ Clear vinyl reverse printed decal with international no smoking symbol (red) and details of how to report a violation per RI DOH guidelines. Text and symbols shall be printed with UV stable ink.

P1 White. Matte non glare finish

P6 Pantone 485 Red. Matte non glare finish

P3 Rowmark ADA Alternative 3X1-398 (Graphite)
OR equal to:MP Matthews Paint 18214Grey Patina Met.
Matte non glare finish

SECTION 12 3530 - RESIDENTIAL CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Kitchen cabinets.
- B. Related Sections:
 - 1. Division 12 Section "Simulated Stone Countertops" for solid surfacing countertops.
 - 2. Division 22 Sections for sinks and plumbing fittings.

1.3 DEFINITIONS

- A. Exposed Surfaces of Cabinets: Surfaces visible when doors and drawers are closed, including visible surfaces in open cabinets or behind glass doors.
- B. Semiexposed Surfaces of Cabinets: Surfaces behind opaque doors or drawer fronts, including interior faces of doors and interiors and sides of drawers, and bottoms of wall cabinets.
- C. Concealed Surfaces of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, bottoms of drawers, ends of cabinets installed directly against and completely concealed by walls or other cabinets, and tops of wall cabinets and utility cabinets.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Cabinets.
 - 2. Cabinet hardware.
- B. Shop Drawings: For cabinets and countertops. Include plans, elevations, details, and attachments to other work. Show materials, finishes, filler panels, hardware, edge and backsplash profiles, methods of joining countertops, and cutouts for plumbing fixtures.
- C. Samples for Initial Selection: For cabinet finishes.

- D. Samples for Verification: For the following products:
 - 1. Exposed hardware, for each type of item.
- E. Qualification Data: For qualified manufacturer.
- F. Product Certificates: For casework, from manufacturer.

1.5 QUALITY ASSURANCE

- A. Source Limitations for Cabinets: Obtain cabinets from single source from single manufacturer.
- B. Product Options: Drawings indicate size, configurations, and finish material of cabinets by referencing designated manufacturer's catalog numbers. Other manufacturers' cabinets of similar sizes and door and drawer configurations, same finish material, and complying with the Specifications may be considered.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet work is complete and dry, and temporary HVAC system is operating and maintaining temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.

1.7 COORDINATION

- A. Coordinate layout and installation of blocking and reinforcement in partitions for support of casework.
- B. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 CABINETS

- A. Basis of Design Product: Subject to compliance with requirements, provide **Wolf Home Products; Wolf Classic** or comparable product by one of the following:
 - 1. Crown Point Cabinetry.
 - 2. Wood-Mode.

- B. Quality Standard: Provide cabinets that comply with KCMA A161.1.
1. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semiexposed location of each unit and showing compliance with the above standard.
- A. Cabinet Construction:
1. Cabinet shall be constructed of hardwood plywood or solid wood components, the use of particleboard is not acceptable.
 2. Cabinets shall be full assembled prior to shipping.
 3. The use of unassembled cabinets with locking screw cams will not be acceptable.
 4. Cabinets shall be made in America using 60% or more American contents.
- B. Cabinet Fronts: Constructed from solid Maple.
1. Cabinet Front: 3/4 inch solid Maple finished to match doors and drawer fronts.
 2. Cabinet fronts shall be pocket drilled and screwed.
 3. Corner Blocks: 1 1/2 inch hardwood plywood, or solid maple blocking.
- C. Door and Drawer Fronts:
1. Dartmouth: Center panels shall be MDF mounted in solid maple frame and finished to match cabinet front.
- D. Drawer Box Construction:
1. Drawer Box: Front sides and backs constructed of 5/8 inch solid wood with clear finish and dovetail jointing.
 2. Drawer Bottom: 1/4 inch plywood captured in dado on all four sides.
- E. Cabinet Side Panels:
1. Constructed of 1/2 inch, 7 ply, hardwood plywood with vinyl finish to match cabinet exterior.
 2. Glued and stapled into 1/2 inch dado in cabinets front frame.
- F. Cabinet Back Panels:
1. Constructed of 1/2 inch, 7 ply, hardwood plywood finished on the interior of the cabinet with vinyl.
 2. Glue and nailed in 1/2 inch dado stapled to the hanging rail and cabinet bottom
- G. Hanging Rail Construction: 1/2 inch, 7 ply, hardwood plywood.
- H. Shelves: 3/4 inch, hardwood plywood with bullnosed front edge, held in place with an adjustable self-locking clip.
- I. Wall Cabinet Tops: 1/2 inch thick hardwood plywood with vinyl finish on top and bottom surfaces.

- J. Base Cabinet Toe Kick Panel: 1/2 inch thick hardwood plywood.
 - 1. Typical Toe Kick: 4 inch high.
- K. Accessories: Provide all cabinet accessories as indicated on Drawings for a complete installation.
- L. Factory Finishing: Finish cabinets at factory. Defer only final touchup until after installation.
 - 1. Color: As indicated on Material List.

2.2 CABINET MATERIALS

- A. General:
 - 1. Hardwood Lumber: Kiln dried to 7 percent moisture content.
 - 2. Hardwood Plywood: HPVA HP-1.
- B. Exposed Materials:
 - 1. Exposed Wood Species: Manufacturer's standard domestic hardwood species.
 - a. Select materials for compatible color and grain. Do not use two adjacent exposed surfaces that are noticeably dissimilar in color, grain, figure, or natural character markings.
 - b. Staining and Finish: As indicated on Finish/Color Legend by manufacturer's designations.
 - 2. Solid Wood: Clear hardwood lumber of species indicated, free of defects.
 - 3. Plywood: Hardwood plywood with face veneer of species indicated, with Grade A faces and Grade C backs of same species as faces.
 - a. Edge band exposed edges with minimum 1/8-inch- thick, solid-wood edging of same species as face veneer.
- C. Semiexposed Materials: Unless otherwise indicated, provide the following:
 - 1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects. Same species as exposed surfaces or stained to be compatible with exposed surfaces.
 - 2. Plywood: Hardwood plywood with Grade C faces and not less than Grade 3 backs of same species as faces. Face veneers of same species as exposed surfaces or stained to be compatible with exposed surfaces.
- D. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility; or particleboard.

2.3 CABINET HARDWARE

- A. General: Manufacturer's standard units complying with BHMA A156.9, of type, size, style, material, and finish as selected by Architect from manufacturer's full range.
- B. Pulls: Back-mounted decorative pulls, brushed nickel, 3-3/4 inches center to center.
 - 1. Basis of Design Product: Subject to compliance with requirements, provide the following:
 - a. Berenson; Model 9401-2BPN-P.
- C. Hinges: Concealed European-style, self-closing hinges.
- D. Drawer and Hinged Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1.
 - 1. Provide a minimum of two keys per lock and six master keys.
 - 2. Provide locks on all doors and drawers.
- E. Soft Close Drawer Glides: Grass full extension, undermount glides with soft close, rated for 75 lbs.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install cabinets with no variations in flushness of adjoining surfaces; use concealed shims. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match cabinet face.
- B. Install cabinets without distortion so doors and drawers fit openings, are aligned, and are uniformly spaced. Complete installation of hardware and accessories as indicated.
- C. Install cabinets and countertop level and plumb to a tolerance of 1/8 inch in 8 feet.
- D. Fasten cabinets to adjacent units and to backing.
 - 1. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips.

3.2 ADJUSTING AND CLEANING

- A. Adjust cabinets and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

- B. Clean casework on exposed and semiexposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION 12 3530

SECTION 12 3661 – SIMULATED STONE COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Quartz agglomerate countertops.

- B. Related Sections:

- 1. Division 12 Section "Residential Casework."
 - 2. Division 22 Section for non-integral sinks and plumbing fittings.

1.3 SUBMITTALS

- A. Product Data: For countertop materials.

- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.

- C. Samples for Verification:

- 1. Countertop material, 6 inches square.

- D. Qualification Data: For Installer and fabricator.

- E. Sealant Compatibility Test Report: From sealant manufacturer, complying with requirements in Division 07 Section "Joint Sealants" and indicating that sealants will not stain or damage simulated stone.

- F. Maintenance Data: For countertops to include in maintenance manuals. Include Product Data for stone-care products used or recommended by Installer, and names, addresses, and telephone numbers of local sources for products.

- G. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate simulated stone countertops similar to that indicated for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products.
- C. Quality Standard: Unless otherwise indicated, comply with AWT's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - 1. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.
- D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of typical solid surfacing countertop and backsplash in location as directed by Architect.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions of construction to receive countertops by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace solid-surface-material countertops that fail within specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Quartz Agglomerate: Solid sheets consisting of quartz aggregates bound together with a matrix of filled plastic resin and complying with ICPA SS-1, except for composition.
1. Basis of Design Product (SS-1): Subject to compliance with requirements, provide the following, or equal:
 - a. **LX Hausys; Viatera.**
 2. Color: As indicated on Materials List.

2.2 SOLID-SURFACE-MATERIAL COUNTERTOPS

- A. Configuration: Provide countertops with the following front and backsplash style:
1. Front: As indicated.
 2. Backsplash: Straight, slightly eased at corner.
 3. Endsplash: Matching backsplash.
- B. Countertops: Solid surface material with front edge built up with same material.
1. Thickness: 1/2-inch thick.
- C. Backsplashes: 1/2-inch- thick, solid surface material.
- D. Fabrication: Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

2.3 ADHESIVES, SEALANTS, AND ACCESSORIES

- A. General: Use only adhesives formulated for simulated stone and recommended by their manufacturer for the application indicated.
- B. Water-Cleanable Epoxy Adhesive: ANSI A118.3.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Bonsal, W. R. Company.
 - b. Laticrete International, Inc.
 - c. MAPEI Corp.
- C. Joint Sealant: Silicone sealant to comply with Division 07 Section "Joint Sealants."
- D. Cleaner: Cleaner specifically formulated for simulated stone types, finishes, and applications indicated, as recommended by manufacturer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates indicated to receive countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of countertops.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work acknowledges acceptance of substrates.

3.2 PREPARATION

- A. Clean dirty or stained surfaces by removing soil, stains, and foreign materials before setting. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives. Allow stone to dry before installing.

3.3 CONSTRUCTION TOLERANCES

- A. Variation from Level: Do not exceed 1/16 inch in 120 inches.
- B. Variation in Joint Width: Do not vary joint thickness more than 1/4 of nominal joint width.
- C. Variation in Plane at Joints (Lipping): Do not exceed 1/64-inch difference between planes of adjacent units.
- D. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64-inch difference between edges of adjacent units, where edge line continues across joint.

3.4 INSTALLATION OF COUNTERTOPS

- A. General: Install countertops by adhering to supports with water-cleanable epoxy adhesive.
- B. Set countertops to comply with requirements indicated on Drawings and Shop Drawings. Shim and adjust countertops to locations indicated, with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances. Install anchors and other attachments indicated or necessary to secure stone countertops in place.
- C. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
- D. Install backsplash and end splash by adhering to wall with water-cleanable epoxy adhesive. Leave 1/16-inch gap between countertop and splash for filling with sealant. Use temporary shims to ensure uniform spacing.
 - 1. Apply silicone sealant to gap between wall and backsplash.

- E. Apply sealant to joints; comply with Division 07 Section "Joint Sealants." Remove temporary shims before applying sealant.

3.5 ADJUSTING AND CLEANING

- A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive and sealant smears immediately.
- B. Remove and replace simulated stone countertops of the following description:
 - 1. Broken, chipped, stained, or otherwise damaged simulated stone. Simulated stone may be repaired if methods and results are approved by Architect.
 - 2. Defective countertops.
 - 3. Defective joints, including misaligned joints.
 - 4. Interior simulated stone countertops and joints not matching approved Samples and mockups.
 - 5. Interior simulated stone countertops not complying with other requirements indicated.
- C. Replace in a manner that results in countertops matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.
- D. Clean countertops not less than six days after completion of installation, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage simulated stone.

END OF SECTION 12 3661

SECTION 15300**Fire Protection****INDEX**

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SECTION 15300 – FIRE PROTECTION

PART 1 - GENERAL

1.1 Provisions Include

- A. Include general conditions, supplementary general conditions division 0 and applicable parts of division 1 for conditions and requirements which may affect the work 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.
- C. Coordinate work with that of all other trades affecting or affected by work of this section. Cooperate with such trades to ensure the steady progress of all work under the contract.

1.2 Definitions

- A. Words in the singular shall also mean and include the plural, wherever the context so indicates and words in the plural shall mean the singular, wherever the context so indicates.
- B. Wherever the terms "shown on drawings" are used in the specifications, they shall mean "noted", "indicated", "scheduled", "detailed", or any other diagrammatic or written reference made on the drawings.
- C. Wherever the term "provide" is used in the specifications it will mean "furnish" and "install", "connect", "apply", "erect", "construct", or similar terms, unless otherwise indicated in the specifications.
- D. Wherever the term "material" is used in the specifications it will mean any product, "equipment", "device", "assembly", or "item" required under the contract, as indicated by trade or brand name, manufacturer's name, standard specification reference or other description.
- E. The terms "approved", or "approval" shall mean the written approval of the architect.
- F. The term "specification" shall mean all information contained in the bound or unbound volume, including all "contract documents" defined therein, except for the drawings.
- G. The terms "directed", "required", "permitted", "ordered", "designated", "prescribed" and similar words shall mean the direction, requirement, permission, order, designation or prescription of the architect. The terms "approved", "acceptable", "satisfactory" and similar words shall mean approved by, acceptable or satisfactory to the architect. The terms "necessary", "reasonable", "proper", "correct" and similar words shall mean necessary, reasonable, proper or correct in the judgment of the architect.
- H. "Piping" includes in addition to pipe or mains, all fittings, flanges, unions, valves, strainers, drains, hangers and other accessories relative to such piping.

- I. "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction or in crawl spaces.
- J. "Exposed" means not installed underground or "concealed" as defined above.
- K. "Invert Elevation" means the elevation of the inside bottom of the pipe.
- L. "Fire Protection Contractor (FPC)" shall refer to the contractor (or his subcontractors) responsible for furnishing and installation of all work indicated on the fire protection drawings and specifications, as applicable and or referenced to each trade in the architectural and/or structural documents.

1.3 Codes, Standards and References

- A. All materials and workmanship shall comply with all applicable state Rhode Island building codes, specifications, local and state ordinances, industry standards and utility company regulations, and latest editions.
- B. In case of conflict between the contract documents and the requirements of any code or authorities having jurisdiction, the most stringent requirements of the aforementioned shall govern for budgetary purposes. However, no work will proceed until the architect determines the correct method of installation.
- C. Should any contractor, as applicable, perform any work that does not comply with the requirements of the applicable building codes, state laws, local ordinances, industry standards and utility company regulations, he shall bear all costs arising in correcting the deficiencies, as approved by the architect.
- D. Applicable codes and standards shall include all state laws, local ordinances, utility company regulations and the applicable requirements of the following accepted codes and standards, without limiting the number, as follows:
 - 1. National fire protection association (NFPA) standards NOS: 13, 24, 25, 45, 70, 72 and NFPA 101, life safety code
 - 2. National electric code (NEC)
 - 3. Building code - IBC.
 - 4. Rhode Island Fire Prevention Regulations.
 - 5. Local ordinances, regulations of the local building department and fire department
 - 6. Underwriters laboratories
 - 7. State Fire Marshall

- E. The FPC for the work under his charge, shall give all necessary notices, obtain and pay for all permits, pay all governmental taxes, fees and other costs in connection with his work; file for necessary approvals with the jurisdiction under which the work is to be performed. The FPC shall obtain all required certificates of inspection for his work and deliver same to the architect before request for acceptance of his portion of work and before final payment is made.
- F. All equipment shall be installed per manufacturer's recommendations and requirements. The FPC shall notify the architect in writing when they intend to deviate from manufacturer's installation guidelines. The architect shall advise if the installation is acceptable prior to installation.

1.4 Related Sections

- A. Examine drawings and criteria sheets and other sections of the specifications including, but not limited to, the following for requirements which affect work under this section whether or not such work is specifically mentioned in this section. Coordinate all work with that of all other trades affecting or affected by work in this section.
- B. 1. Electrical
- C. 2. HVAC
- D. 3. Site work
- E. 4. Temporary conditions

1.5 Work Included

- A. Code compliance, research, design, coordination, and installation of a complete and functional hydraulically calculated Sprinkler system and combined riser standpipe system and fire pump, that meets the approval, and is in accordance with the requirements of factory mutual (fm), NFPA 101-life safety code, owner standards, NFPA fire protection standards, underwriters laboratory (ul), local and state regulation, and these specifications.
- B. This is a performance specification. It requires performance of design work, preparation and submission of drawings, procurement of approvals, and provision of complete functional system of automatic Sprinklers and/or standpipes. As a result, this section serves the dual purpose of providing specifications and indicating design criteria for contractor's use and guidance in designing systems and preparing Sprinkler drawings for approval.
- C. Alarm system devices including alarm valves, flow switches/pressure switches, tamper switches and coordination with section 16000.
- D. Shop drawings and calculations prepared and submitted in accordance with the requirements of the local fire department and the owner's insurance underwriter.
- E. Permits and approvals of the fire protection system.
- F. Field acceptance testing and certification.

- G. Coordination drawings.
- H. Submittal drawings and working plans shall be prepared utilizing a computer generated system compatible with owners' AutoCAD drawing system.
- I. Hydrant flow test.
- J. Complete automatic wet Sprinkler system.
- K. Automatic Sprinkler heads.
- L. Sprinkler accessories.
- M. Inspectors test stations.
- N. Access panels.
- O. Escutcheons.
- P. Core drilling of holes up to and including 12" diameter.
- Q. Sleeves, inserts and hangers.
- R. Staging and planking up to and including 8 feet in height.
- S. Record drawings.
- T. Operation and maintenance manuals.
- U. Valve tags and charts.
- V. Instructions.
- W. Hoisting, rigging and setting of all pipe and equipment.
- X. Fees, permits, royalties, guarantees.
- Y. Piping and valves
- Z. Connection to existing sprinkler system.
- AA. Demolition
- BB. Phasing

1.6 Design Criteria

- A. Sprinkler systems and all components, piping, valves and head location, ratings, etc., shall be designed in accordance with NFPA 13, 24, state building code and owner's insurance company and other applicable NFPA pamphlets governing the installation of underground fire mains, alarm valves, system drains, etc. The fire protection subcontractor shall submit his shop drawings to local fire department and building department and owner's insurance company for approval prior to submission to architect for approval.
- B. The fire protection work is partially shown on the fire protection drawings. Sprinkler head locations are shown on the architectural reflected ceiling plans for the public areas. Each bidder for work under this section of the specifications shall establish for himself, the exact quantity of heads required. Refer to architectural reflected ceiling plans for preferred Sprinkler head locations. Additional head shall be provided as part of this contract, as required, to satisfy the code requirements for the hazard stated.
- C. Each bidder shall refer to the fire protection drawings and architectural reflected ceiling plans for major fire protection system's components, piping, head locations and which areas are to have fire department valves, etc.
- D. Provide a complete and operable fire suppression system in all areas that are a part of this contract. Coordinate all Sprinkler head locations with the architectural reflected ceiling plans.
- E. Hydraulic calculations shall be based on flow characteristics specified herein for bid purposes only. Actual flow test must be performed, or data must be obtained and verified as acceptable by all authorities having jurisdiction by the fire protection subcontractor. The fire protection subcontractor shall perform his own up-to-date flow test to architect for his review; indication of test location, date, flow, residual and static pressure, etc., as outlined in NFPA #13 and #291. The fire protection subcontractor shall coordinate the flow test of the owner and local water department and pay all costs and fees associated with flow test at no additional cost to the owner.
- F. Inspector test valves assemblies are to be located at the remote end of each zone. Provide test assemblies with sight glasses and hard pipe express drains to hub drains.
- G. Flow test data
 - H. 1. Test date: -
 - I. 2. Agency: -
 - J. 3. Static pressure: - psi.
 - K. 4. Residual pressure: - psi. To be provided by FP subcontractor
 - L. 5. Flow rate: - gpm.
 - M. 6. Location: flow hydrant

- N. 7. Elevation: - feet.
- O. The hydraulic calculations shall include the hydraulically most remote area for systems supplied by more than one combination riser. Hydraulic calculations shall show the remote areas being supplied solely from the hydraulically most remote combination riser.
- P. Velocity shall not exceed 20 fps.
- Q. All calculations shall assume 10 psi deterioration in static and regional pressures in the hydrant flow test results.

1.7 Submittals

- A. Refer to section 15050 and general conditions for additional requirements.
- B. Submittals - the following documents shall be provided:
 - C. 1. Flow test data
 - D. 2. Complete hydraulic calculations and working plans in accordance with NFPA-13.
 - E. 3. Complete stamped and coordinated shop drawings
 - F. 4. Pipe and fittings
 - G. 5. Valves
 - H. 6. Sprinkler heads
 - I. 7. Escutcheons
 - J. 8. Applicable devices, alarms and specialties
 - K. 9. Hangers and seismic restraint
 - L. 10. Submittals data shall be in bound sets and be submitted at one time. Transmit to the owner's representative for review and approval.
 - M. 11. Do not proceed with any work without final approved submittal data bearing approval stamps, including the owner's representative and the local or state fire marshal.

1.8 Guarantee/warranties:

- A. Attention is directed to provisions of the general requirements and supplementary general conditions regarding guarantees and warranties for work under this contract.
- B. Manufacturers shall provide their standard guarantees for work under this contract, unless specified otherwise. However, such guarantees shall be in addition to and not in lieu of all other

liabilities which the manufacturer and prime contractor may have by law or by other provisions of the contract documents. In any case, such guarantees and warranties shall commence when the owner accepts the various systems, as applicable and as determined by the architect. The guarantees and warranties will remain in effect for a minimum period of (1) year thereafter except where longer periods are specifically stated and specified.

- C. All materials, items of equipment and workmanship furnished by the FPC shall carry the warranty against all defects in material and workmanship. Any fault due to defective or improper material, equipment, workmanship or design which may develop shall be made good, forthwith, by and at the expense of the FPC responsible, including all other damage done to areas, materials and other systems resulting from this failure.
- D. The FPC shall guarantee that all elements of the systems provided under his contract are of sufficient capacity to meet the specified performance requirements as set forth herein or as indicated on the drawings.
- E. Upon receipt of notice from the owner of failure of any part of the systems or equipment during the guarantee period, the affected part or parts shall be replaced by the responsible contractor.
- F. The FPC shall furnish, before the final payment is made, a written guarantee covering the above requirements.

1.9 The Contractor

- A. The FPC shall base his bid on site examinations performed by him. This requirement is mandatory. The FPC shall visit the proposed site where work is scheduled to be performed and ascertain for himself the amount of work required to fulfill the intent of his contract and the complexity of the installation. The FPC shall not hold the architect, his consultants, agents or employees responsible for or bound by, any schedule, estimate or for any plan thereof. The FPC shall study all contract documents (HVAC, plumbing, electrical, architectural, structural), etc., included under each contract, to determine exactly the extent of work to be provided under each section, and in installing new equipment and systems and coordinating the work with the other trades and existing conditions.
- B. The FPC shall faithfully execute his work according to the terms and conditions of the contract and specifications and shall take all responsibility for and bear all losses resulting to him in the execution of his work.
- C. The FPC shall be responsible for the location and performance of work provided under his contract as indicated on the contract documents. All parties employed directly or indirectly by the FPC shall perform their work according to all the conditions as set forth in these specifications.
- D. The FPC shall furnish all materials and perform all work in accordance with the project specifications and any supplementary documents provided by the architect. The work shall include every item shown on the drawings and/or required by the specifications as interpreted by the architect. All work and materials furnished and installed shall be new and of the best quality and workmanship. The FPC shall cooperate with the architect so that no error or discrepancy in the contract documents shall cause defective materials to be used or poor workmanship to be performed.

1.10 Coordination Drawings

- A. Before materials are purchased, fabricated or work is begun, the FPC shall prepare coordination drawings for all floors/areas, including buried systems/services (all-trade-composite at 1/4" scale), showing the size and location of his equipment and lines, in the manner described herein under general requirements.
- B. Coordination drawings are for the prime contractor and their subcontractor **use** during construction and shall not be construed as shop drawings or as replacing any shop drawings. The coordination drawings, when corrected for actual "as-built" conditions, will be reviewed by the architect, corrected and become the record drawings to be submitted to the owner for his use.
- C. The cost of producing and reproducing the drawings will be included under the contract of each trade, including the cost or preparation of the architectural building outlines. The HVAC contractor shall take the lead to produce the architectural backgrounds, show all ductwork, piping, etc., and circulate the drawings to all of prime contractors and the other trades (plumbing, fire protection, electrical), so that they can indicate all top prime as directed by the cm and architect as required, to result in a fully coordinated installation.
- D. In addition to the regular coordination drawing review, the fire protection work will also be reviewed by the architect to ensure that the system and equipment arrangements are suitable to provide maintenance access and service as follows:
 - 1. Valves and fire alarm connections should be grouped where possible and positioned in accessible locations.
- E. Prepare a complete set of computer-based AutoCAD version 2018 drawings at scale not less than 1/4" scale equals 1'-0", showing basic layout for the structure and other information as needed for preparation of coordination drawings. The drawings shall indicate the layout of all specialty trade work as indicated herein and shall be designated as coordination drawings. The FPC shall provide a minimum of two (2) weeks notice to the architect for preparation of the disk. A signed liability release form will be required from the contractor prior to the release of the disk from the architect.
- F. Highlight all fire rated partitions on the coordination drawings for appropriate coordination.
- G. The main paths for the installation or removal of equipment from mechanical and electrical rooms shall be clearly indicated on the coordination drawings.
- H. Each of the specialty trades shall add its work to the base drawings with appropriate elevations and grid dimensions. Specialty trade information shall be required for mechanical rooms, crossovers and for spaces above ceilings where congestion of work may occur such as corridors and, where required, entire floors. Drawings shall indicate horizontal and

vertical dimensions to avoid interference with structural framing, ceilings, partitions and other services. Indicate elevations relative to finish floor for bottom of piping.

1. Specialty trade shall include:
 - a. Plumbing system.
 - b. HVAC piping and associated control systems.
 - c. Electrical.
 - d. Sheet metal work.
 - e. Fire protection system.
- I. Upon completing their portion of the coordination drawings, each specialty trade shall sign, date and return coordination drawings to the contractor.
- J. Where conflicts occur with placement of materials of various trades, the prime contractor shall be responsible to coordinate the available space to accommodate all trades. Any resulting adjustments shall be initialed and dated by the affected specialty trade contractor. The prime contractor shall then final date and sign each drawing.
- K. Fabrication shall not start until coordinate drawings have been distributed to all parties as indicated herein.
- L. Format: coordination drawings (plans only) shall be done using cad in AutoCAD 2018 in IBM format. Disks shall be given to the architect for future transfer to owner. Coordination drawings will be used as base for as-built drawings.
- M. Distribution of Coordination Drawings:
 1. The prime contractor shall provide one print of each coordination drawing to:
 - a. Each specialty trade contractor.
 - b. Prime contractor.
 - c. Architect (for record purposes).
- N. After distribution:
 1. The method used to resolve interference's not previously identified shall be as in paragraph h. Above. Distribute revised coordination drawings to all parties listed above.

O. Coordination drawings include but are not necessarily limited to:

1. Structure.
 2. Partition/room layout, including indication of smoke and fire resistance rated partitions.
 3. Ceiling layout and heights.
 4. Light fixtures.
 5. Access panels.
 6. Sheet metal, heating coils, heat pumps, grilles, diffusers, etc.
 7. All heating piping and valves.
 8. Smoke and fire dampers.
 9. Soil, waste and vent piping.
 10. Major water.
 11. Major electrical conduit runs, panelboards, feeder conduit and racks of branch conduit. Motor control centers, starters and disconnects.
 12. Sprinkler piping and heads.
 13. All equipment, including items in the contract as well as O.F.C.I. and O.F.I. items.
 14. Equipment located above finished ceiling requiring access for maintenance and service. In locations where acoustical lay-in ceilings occur indicate areas in which the required access area may be greater than the suspended grid systems.
- P. The architect's response to all requests for information (RFI's) generated by the trade contractors shall be distributed to all other affected trades as if this information was contained in the original contract documents. In other words, the party that issues an RFI is responsible for distributing the information to all affected parties.

1.11 Record Drawings

- A. The FPC shall maintain, current at the site, a set of contract drawings for his portion of the work on which he shall accurately show the actual installation of all work provided under his contract indicating any variation from the contract drawings, in accordance with the general conditions and supplementary general conditions. Changes whether resulting from

formal change orders, requests for information, or other instructions issued by the architect shall be recorded. Include changes in sizes, location and dimensions of piping, ducts, equipment, etc.

- B. The FPC shall indicate progress by coloring-in various pipes and associated appurtenances exactly as they are erected. This process shall incorporate both the changes noted above and all other deviations from the original drawings whether resulting from job conditions encountered or from any other causes.
- C. The marked-up and colored-up prints will be used as a guide for determining the progress of the work installed. They shall be inspected periodically by the architect and owner's representatives, and they shall be corrected if found either inaccurate or incomplete. This procedure is mandatory. Marked up drawings shall include all flow diagrams, schedules, details and control diagrams.
- D. The FPC shall meet at a minimum on a monthly basis, with the owner's representative to transfer the information from his fire protection marked-up and colored-up prints to a set which will become the basis for preparation of as-built drawings.

1.12 Cutting and Patching

- A. The FPC shall be responsible for all core drilling, as required for work under his contract, but in no case shall he cut into any structural elements without the written approval of the architect. For additional requirements, refer to division one of the general requirements.
- B. All cutting, rough patching and finish patching, shall be provided under this contract.
- C. All concrete and masonry equipment bases and pads shall be provided under this contract.

1.13 Use of Premises

- A. The FPC shall confine all of his apparatus, storage of materials and construction to the limits indicated on the drawings and directed by the architect and he shall not encumber the premises with his materials.
- B. In storing materials within areas (structure or ground), or when used as a shop, the FPC shall consult with the prime contractor and shall restrict his storage to space designated for such purposes. The FPC will be held responsible for repairs, patching or cleaning arising from any unauthorized use of premises.
- C. Notwithstanding any approvals or instructions which must be obtained by the FPC from the architect in connection with use of premises, the responsibility for the safe working conditions at the site shall remain the FPC's. The architect or owner shall not be deemed to have any responsibility or liability in connection therewith.

1.14 Protection

- A. All materials such as valves, fittings, piping, etc. Shall be properly protected and all piping openings shall be temporarily closed by the FPC [or subcontractor's] installing same, so to prevent obstruction and damage. The FPC shall take precautions to protect his materials from damage and theft.
- B. The FPC shall furnish, place and maintain proper safety guards for the prevention of accidents that might be caused by the workmanship, materials, equipment or electrical systems provided under his contract.

1.15 Damage Correction and Extra Work

- A. The FPC shall be held responsible and shall pay for all damages caused by his work to the new and existing building structures and new and existing equipment, piping, duct systems, etc., and all work and finishes installed under this contract in the new or in existing building. Repair of such damage shall be done as herein before specified, at the expense of the FPC and to the architect's satisfaction.
- B. The FPC shall promptly correct all work provided under his contract and rejected by the architect as defective or as failing to conform to the contract documents whether observed before or after completion of work and whether or not fabricated, installed or completed. The FPC shall bear all costs of correcting such rejected work.
- C. No claim for extra work will be allowed unless it is authorized by the architect in writing before commencement of the extra said work.

1.16 Touch-up Painting

- A. The FPC shall thoroughly clean all equipment and systems provided under this contract from rust, splatters and other foreign matter or discoloration, leaving every part of each system in an acceptable prime condition. The FPC, for the work under his contract, shall refinish and restore to the original condition all equipment and piping which has sustained damage to the manufacturer's prime and finish coats of paint and/or enamel.

1.17 Parts List and Instructions for Operation and Maintenance

- A. The FPC shall thoroughly instruct the representative(s) of the owner, to the complete satisfaction of the architect, in the proper operation of all systems and equipment provided by him. The FPC shall make arrangements, via the cm as to whom the instructions are to be given in the operation of the basic and auxiliary systems and the periods of time in which they are to be given. The architect shall be completely satisfied that the representative of the owner has been thoroughly and completely instructed in the proper operation of all systems and equipment before final payment is made. If the architect determines that complete and thorough instructions have not been given by the FPC to the owner's representative, then the FPC shall be directed by the architect to provide whatever

instructions are necessary until the intent of this paragraph of the specification has been complied with. All time required for owner's instruction to satisfy the above requirements shall be included in this contract. No extra compensation for such instructions will be allowed.

- B. The FPC shall provide operating and maintenance data in accordance with the specification. All data and literature furnished shall be specific for the make and model of the equipment furnished. General non-specific catalog data will not be acceptable. Information shall indicate possible problems with equipment and suggested corrective action. The manuals shall be indexed for each type of equipment. Each section such as valves, fire pump, Sprinklers, etc., shall be clearly divided from the other sections. A sub- index for each section shall also be provided. The methodology of setting-up the manuals shall be submitted to the architect and owner through the prime contractor for approval prior to final submission of manuals.

1.18 Connections to Equipment

- A. The FPC shall provide all pipe connections, drains, relief valves, power connections, etc., to make equipment operable, as provided under other sections of the specifications, as shown on the architectural and/or each trade's drawings and herein specified, including final connections to equipment to result in a complete system, fully operational. Coordinate location of all equipment with architect. Obtain installation diagrams and methods of installation of all equipment from manufacturers. Follow instructions strictly. If additional information is required, obtain same from architect. If equipment is indicated on the architectural drawings, it shall also be construed and understood by the FPC to be constructed as shown on the fire protection drawings and shall be fully serviced and connected at no extra cost to the owner.

1.19 Electrical Room Requirements

- A. The FPCs shall not install any piping or equipment in or through electrical rooms, transformer rooms, electrical closets, telephone rooms or elevator machine rooms, unless piping or equipment is intended to serve these rooms. If any contractor violates this requirement, he shall remove and/or relocate all items as required at his expense and to the satisfaction of the architect.

1.20 Hoisting Equipment and Machinery

- A. All hoisting equipment and machinery required for the proper and expeditious prosecution and progress of the work under this contract shall be furnished, installed, operated and maintained in safe condition by the FPC for his material and/or equipment delivered to the designated hoisting area. All costs for hoisting operating services shall be borne by the FPC for all equipment and work under his charge.

1.21 Staging

- A. All staging, exterior and interior, required to be over 8'-0" in height shall be furnished and erected by the FPC for work under his charge and maintained in safe condition by him for proper execution of his work

1.22 Pipe Sleeves, Plates and Escutcheons, Firestopping and Smokeproofing

- A. Where piping pass through all masonry concrete walls and floors, the FPC shall provide and set individual sleeves for each pipe and all other work under his charge, as necessary for passage of all pipes. Sleeves shall be of sufficient size to provide 1/2" air space around the pipe passing through. All openings shall be sealed, smokeproofed and made tight. The FPC shall be responsible for the exact location of sleeves provided under his contract and shall coordinate all requirements for piping sleeves. In the event that failure to do so requires cutting and patching, it shall be done at this contractor's expense.
- B. The FPC, for work under his charge, shall determine the required inside diameter of each individual wall opening or sleeve before ordering, fabrication or installation.
- C. Sleeves passing through lightproof or soundproof walls and floors and through firewalls shall be sealed and made tight using only approved materials and methods.
- D. Sleeves and inserts shall not be used in any portions of the building, where their use would impair the strength or construction features of the building. Elimination of sleeves must be approved by the architect.
- E. Provide chrome plated brass escutcheons with set screw for exposed piping, in all areas except in mechanical rooms. In this area use plain brass or cast iron escutcheons suitable for painting. All escutcheons shall be sized to fit the bare pipe or insulation in a snug and neat manner. They shall be of sufficient size to cover sleeved openings for the pipes and of sufficient depth to cover sleeves projecting above floors. Escutcheons shall be as manufactured by Beaton & Caldwell, Dearborn brass, or Grinnell. All escutcheons shall be of one-piece construction.
- F. Pipe sleeves shall be made of schedule 40 pipe, 20 gauge galvanized steel or 16 gauge steel as follows:
 - 1. Sleeves on pipes passing through masonry or concrete construction shall be schedule 40 pipe.
 - 2. Sleeves on pipes passing through drywall construction shall be 20 gauge galvanized steel.
 - 3. Sleeves on pipes passing through fire rated partitions shall be 16 gauge steel.
- G. Pipe sleeves shall be set as follows:

1. Set sleeves 1" above finish floor, (except set sleeves, 6" above finish floor at penthouses or mechanical rooms and 6" above finished roof) and flush on each side of walls. Coordinate roof penetrations with roofing contractor.
 2. Sleeves shall be set securely in place before concrete is poured when placed in concrete construction.
- H. The FPC shall firestop or smoke stop the space between the sleeves provided under his contract and piping as applicable, as follows:
1. Through-penetration firestopping in fire rated construction
 - a. Systems or devices listed in the UL categories xhcr and hxel may be used, providing that they conform to the construction type, penetrant type annular space requirements and fire rating involved in each separate instance, and that the system be symmetrical for wall applications. Systems or devices must be asbestos-free.
 - b. Additional requirements: systems must withstand the passage of cold smoke either as an inherent property of the system or by the use of a separate product included as a part of the UL system or device.
 - c. Acceptable manufacturers and products:
 - 1) Those listed in the UL fire resistance directory for the UL system involved, including 3m, Dow corning, bio fire shield or approved equal.
 - d. All products must be from a single manufacturer.
 2. Smokestopping at Smoke partitions
 - a. Any system complying with the requirements for through penetration firestopping in fire rated construction, as specified in item HL, is acceptable, provided that the system provides the required smoke seal.
 3. Accessories
 - a. Fill, void or cavity materials: as classified under the UL category XHHW.
 - b. Forming materials: as classified under UL category XHKU in the fire resistance directory.

The materials, installation procedures, clean-up, safety precautions and requirements shall be in accordance with manufacturer's published information.

1.23 Waterproofing, Flashing and Counterflashing

- A. Unless specifically indicated otherwise on the drawings, the FPC shall provide all counterflashing and waterproofing of all piping, drains and equipment provided by him, which pierce roofs, walls

and other weather barrier surfaces. All work under this paragraph shall be coordinated with the cm and division 7 of the specification.

- B. All work shall be performed in a workmanlike manner to ensure weatherproof installation. Any leaks developed due to the FPC's work shall be repaired at his expense, to the architect's satisfaction.
- C. Pipes passing through slabs shall have the sleeve extended above floors as hereinbefore specified to retain any water and the space between the pipe and sleeve caulked waterproof fire stopping. The top and the bottom shall be sealed with monolastic caulking compound.
- D. All flashing required for piping penetrations shall be provided by the cm.

PART 2 - PRODUCTS

2.1 Acceptable Products

- A. Materials and equipment provided under this section to make a complete installation shall be UL listed and/or fmg-approved and in compliance with NFPA standards.

2.2 Piping, Fittings, and Joints

- A. Piping shall meet applicable ANSI or ASTM standards requirements and shall have manufacturer's name and standard marked on each length. Joints shall meet applicable ANSI and ASTM standards requirements. Where ANSI and ASTM standard does not exist, joints and fittings shall bear UL listing symbol.
- B. Piping for Sprinkler systems 2" in size and larger may be schedule 10 black steel conforming to ASTM 135. Piping for Sprinklers 1-1/2" and smaller in size shall be schedule 40 black steel conforming to ASTM a53. Should any authority require, Sprinkler risers shall be schedule 40 regardless of size.
- C. Piping for use with hole-cut fittings shall have machine cut holes per manufacturer requirements at predetermined positions, on the centerline of the pipe, of a size to receive the housing locating collar. Hole cutting machine shall be supplied by the fitting manufacturer.
- D. Piping for use with grooved end fittings shall be roll grooved without metal removal or as per manufacture requirements.
- E. Fittings for grooved end steel pipe shall be cast of ductile iron conforming to ASTM a-536 or forged steel conforming to ASTM a-234 (a-106, gr. B), with grooved or shouldered ends for direct connection into grooved piping systems with steel pipe and shall be UL listed and fmg approved, rated for a minimum 300 psi maximum working pressure (mwp) and shall be of one manufacture Victaulic, gruvlok or central.
- F. Branch outlet fittings shall be UL listed and fmg approved, and rated for 500 psi (mwp) on piping 3" and larger, and 300 psi (mwp) on piping under 3" in size and shall be of one manufacture Victaulic, gruvlok or central:
 1. Mechanical tee branch, hole-cut type connections, with locating collar engaging into hole, with standard pressure responsive gaskets and black nuts and bolts similar to Victaulic style 920/920n or
 2. Outlet couplings, construction as hereinafter specified for couplings, with outlets grooved or threaded outlet ends with standard pressure responsive gaskets and black bolts and nuts similar to Victaulic style 72.
 3. No strap, snap and or one bolt outlet fittings will be permitted.
1. Standard black cast iron screwed fittings shall be used on piping 2" and smaller and may be used on larger sizes.

2. All grooved couplings, fittings and mechanical tee branch fittings shall be Victaulic, gruvlok or central.
- G. All pipe, fittings, valves, devices and associated appurtenances shall be rated for pressures that may be developed.
- H. Bushings shall not be permitted where fittings of required sizes are manufactured. Care shall be taken in the design of this work to avoid piping arrangements that would require bushings.
- I. Unless specified otherwise herein, all fittings shall be in accordance with NFPA standards and subject to approval by the architect/engineer. All fittings are to be UL listed and fmg approved.
- J. All close and shoulder nipples shall be of corresponding materials as the pipe and shall be extra heavy pattern.
- K. Piping and fittings may be joined by mechanical grooved couplings. Grooved couplings shall be cast of ductile iron conforming to ASTM a-536 with bolts/nuts conforming to ASTM a-449. Standard gaskets to be used for systems under operating conditions within the range -30°f through +230°f for wet fire protection Sprinkler service. Dry pipe system to be provided with "flush seal" type gaskets. All grooved couplings shall be 300 psi (cwp) as a minimum.
 1. Rigid type couplings: housings cast with offsetting, angle-pattern bolt pads to provide rigidity and system support and hanging in accordance with ANSI b31.1 and b31.9. Couplings that require the use of torque wrenches for proper installation are not permitted similar to Victaulic style 005.
 2. Flexible type couplings: use in locations where vibration attenuation and stress relief are required similar to victaulic style 75.
 3. Flange adapters: flat face, for direct connection to ANSI class 125 or 150 flanged components similar to victaulic style 744.

2.3 Sprinkler heads

- A. All Sprinkler heads shall be listed by u.l. and approved by fmg. All Sprinklers shall be of single manufacturer. Heads shall be as manufactured by reliable or Victaulic. Refer to schedule on drawings.
- B. Sprinkler heads shall be furnished and installed to conform with manufacturer's listing.
- C. All Sprinklers shall be coordinated with a final reflected ceiling plan to arrive at a suitable pattern consistent with proper Sprinkler protection.
- D. All Sprinklers within 8'-0" of the floor in mechanical rooms shall have Sprinkler guards, wire gage type.
- E. Sprinklers shall be located in center of tiles.
- F. Glass bulb type Sprinklers shall not be installed in areas subject to freezing.

- G. Spare heads: provide 20-gauge steel Sprinkler head cabinets with red enamel finish. Furnish the quantities of spare Sprinkler heads for each type installed as required by NFPA standard 13. Furnish Sprinkler wrench for each head type installed. Mount in mechanical room.

2.4 Pipe Hangers and Supports

- A. Acceptable products: hanger materials shall match piping material as required for dielectric isolation. All support systems shall be ul listed and fmg approved and shall meet astm b633, sc1 and sc3.
- B. Support all piping included in the work of this section with hangers and rods attached to the building structure. Hang piping in compliance with NFPA standards and the requirements of this section. Attach beam clamps before application of SPRay fire-proofing.
- C. Piping 2-1/2" and smaller: carbon steel, adjustable swivel.
- D. Piping 3" and larger: carbon steel, adjustable, clevis.
- E. Hanger attachments
 - 1. Beam clamps: carbon steel hanger with lock nut and retaining strap or approved equal.
 - 2. Expansion shields: Hilti HDI or approved equal.
 - 3. Inserts: malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods. Hilti HKD or approved equal.
- F. Space hangers and supports for horizontal steel Sprinkler piping according to the following schedule:

pipe size:	maximum hanger spacing:
1 1/4" and smaller	8'-0"
2 1/2" to 3"	10'-0"
4" to 5"	12'-0"
6"	15'-0"

- G. Hanger rods: mild steel threaded both ends, threaded one end, or continuous threaded. Provide hanger rods sized according to the following schedule:

pipe size	minimum rod diameter
4" and smaller	3/8"
5", 6"	1/2"

- H. Hang sprinkler piping to support the weight of the water filled pipe plus 250 pounds at the hanger.

- I. Hang horizontal fire line piping to support the weight of five times the weight of the water filled pipe plus 250 pounds at the hanger.
- J. Provide steel angle supports attached to the building structure to support piping below ductwork.
- K. Riser clamps: carbon steel riser clamp, black or galvanized finish.
- L. Floor supports: schedule 40 black steel adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- M. All vertical drops and run-out pipes shall be supported by split ring extension type hangers.

2.5 Earthquake Protection and Seismic Restraints

- A. The fire protection subcontractor shall provide all necessary design and materials for seismic restraint and protection of piping and devices against damage where subject to earthquake as required for the entire fire protection system within the building. All isolation and seismic devices shall be the product of a single manufacturer. Products of other manufacturers are acceptable provided their systems strictly comply with this section of the specifications. Provide isolation materials and seismic restraints complete and as manufactured by mason industries, tolco or approved equal.
 - 1. The work under this section shall include the design, furnishing and installation of all restraint devices and systems as may be required for the fire protection system including, but not necessarily limited to, the following:
 - 2. All fire protection equipment and devices such as pumps, air compressors, tanks, etc.
 - 3. All fire protection system piping as required.
 - 4. Piping penetrations through floors and walls.
 - 5. Sleeves with clearances around the outside, as recommended.
 - 6. Equipment isolation bases.
 - 7. Piping flexible connectors.
 - 8. Seismic restrains for isolated equipment.
 - 9. Seismic restraints for non-isolated equipment.
 - 10. Certification of seismic restraint designs.
 - 11. Six (6) elbow swing joints at all building seismic separations as required by NFPA #13.
- B. Submit ten (6) copies of descriptive data for all products and materials, including the following:
 - 1. Catalog cuts and data sheets for the specific isolators, restrains and all other items to be utilized.

2. Details of methods of sleeving, fire protection, smokeproofing and isolation for pipes penetrating walls and slabs.
 3. Specific details of seismic restraints and anchors, including number, size and locations for each piece of equipment.
 4. Calculations to support seismic restraint designs.
 5. All calculations, details and other submittal materials shall be sealed and signed by a structural or civil engineer registered in the state and qualified to perform seismic design calculations.
 6. A seismic design liability insurance certificate that must accompany all submittals.
- C. Code and standard requirements shall include, but not be limited to:
1. Applicable IBC-NBC with any additional state or local requirements.
 2. NFPA 13, and 24 and other applicable NFPA standards.
 3. All state and local codes.
- D. Manufacturers working in this section must provide a seismic design liability insurance certificate and certify their ability to provide engineering and design as required by this section. This certificate shall be submitted to the architect for review prior to any submittals.

PART 3 - EXECUTION

3.1 General

- A. This is a performance specification. It requires performance of design work, preparation and submission of drawings, procurement of approvals and provision of complete functional system of automatic Sprinklers/standpipes. As a result, this section serves dual purposes of providing specifications and indicating design criteria for contractor's use and guidance in designing systems and preparing Sprinkler drawings for approvals.
- B. The contract documents intend to show only the scope of the design, the fire protection contractor shall be responsible for the correct installation of this work in a manner satisfactory to the best practices of his trade to complete the scope of this subcontract in all respects. No roughing work shall be accomplished until the pertinent manufacturer's shop drawings are approved.
- C. The location of piping as indicated on the drawings, unless otherwise noted, is diagrammatic only, and the exact locations shall be determined in the field. The run and arrangement of all pipes shall be approximately as shown on the drawings, as directed during installation, in strict accordance with NFPA pamphlets, and as straight and direct as possible, forming right angles or parallel lines with building walls and other pipes, and neatly spaced. All risers shall be erected true and plumb, parallel with walls and other pipes, and neatly spaced. All horizontal runs of piping, except where concealed in partitions, shall be kept as high as possible and close to walls. Where possible, adjacent pipe lines,

both heating and plumbing, shall be grouped in the same vertical or horizontal planes. All piping shall be concealed and concealed piping shall have a minimum number of fittings. Piping shall not interfere with the operation or accessibility of doors, windows, access panels, valves, h & v unit access, air flow patterns, or equipment, and shall not encroach on aisles or passageways. All piping shall be installed to preserve access to all valves, drains and equipment. Pipe will not be permitted to pass through beams or ribs. Make such offsets and deviations from the drawings as may become necessary to meet actual field conditions.

- D. The fire protection contractor shall be responsible for the correctness of field dimensions and shall check for himself all grades, lines, measurements, and other data in any way effecting his work. He shall refer to the project phasing schedule together with architectural and structural drawings of other trades for a full comprehension of the extent of the work to be performed and to avoid interference and shall not be entitled to any extra compensation for any additional work or expense arising from his failure to do so. In case interference develops the architect shall decide which work is to be relocated, regardless of which was first installed. Work installed by the fire protection contractor which is improperly located and/or interferes with or modifies either the phasing schedule or the architectural or structural design, shall be changed as directed by the architect, and all costs incidental to such changes shall be paid by the fire protection contractor.
- E. The fire protection contractor shall coordinate all his work with the work of all other trades, and shall so arrange his work that there will be no delay in the proper installation and completion of any part or parts of each respective work wherein it may be interrelated with his, so that generally all construction work can proceed in its natural sequence without unnecessary delay, close coordination is also required with the HVAC, plumbing and electrical contractors in areas serving these trades. The fire protection contractor shall also participate with all other contractors in the process of preparing a complete set of coordination drawings prior to installation of any systems.
- F. Contact between piping and dissimilar metals such as hangers, building structural work, or equipment shall be avoided to prevent galvanic action.
- G. Pipe shall be cut accurately to measurements established at the site and shall be worked into place without Springing or forcing. All pipe, regardless of how cut throughout the job, shall be reamed smooth and all burrs removed before being installed. Pipe shall not be split, bent, flattened, nor otherwise injured either before or during the installation. Full lengths of pipes shall be used wherever possible and short lengths of pipe connected with couplings will not be permitted.
- H. The fire protection contractor shall use every precaution in the installation of all piping to prevent dirt, chips, or other foreign materials entering the inside of piping. All pipes shall be clean and blown out to the satisfaction of the architect before closing of any line. Keep the ends of piping capped or blind flanged during the construction of the system to keep out dirt or other foreign matter. The plugs and caps are to remain until permanent and final installation is made. The use of paper, waste, rags and so forth to close openings will not be permitted.
- I. Unions or flanges shall be installed at all equipment valves and at such other places as may be necessary to disconnect piping or at each piece of equipment or accessory which may have to be disconnected to make repairs.

- J. Bushing will not be inserted in fittings for reduction in size where fittings of required size are manufactured.
- K. The fire protection contractor shall also provide the necessary data and supervision for the provision of all holes in the structure, and also for the installation of equipment foundations, including bolt hole templates, weights and manufacturer's recommendations for proper emplacement design. This shall be furnished to the construction manager and other related subtrades.
- L. Equipment and accessories shall be set level, plumb and in proper alignment with reference to adjacent walls. All surfaces coming in contact with walls, floors or other equipment shall have properly planed surfaces with suitable contact on wall and floors.
- M. Clips, hangers, clamps, supports and other attachments to surfaces to be fireproofed shall be installed, insofar as possible, before start of sprayfire proofing work. Piping and equipment that interfere with proper application of fireproofing shall be installed after completion of sprayfire proofing work. Patch and repair sprayfireproofing cut or damaged during course of work specified under this section. Trade responsible for damage shall bear cost of repair.

3.2 Hydrant Flow Test

- A. Notifications: notify the authorities having jurisdiction at least three working days in advance of performing the flow test.
- B. Perform hydrant flow test in compliance with NFPA standards 13 and 291. Perform test as close as possible to new wet-tap connection for new fire service.
 - 1. Pressure drop from static to residual shall be at least 25 percent of the static pressure. The flow at the residual pressure shall meet or exceed the preliminary estimated design flow. Open additional hydrant butts as required to obtain the specified pressure drop or to match the preliminary estimated design flow.
- C. Record elevations of the test hydrants and submit hydraulic graph(s) indicating test results for review and approval before submitting hydraulic calculations and working plans.
- D. Hydraulic graph shall indicate elevation adjustments and water supply curve at wet-tap connection.

3.3 Hydraulically Calculated Sprinkler System

- A. The contractor shall provide a hydraulically designed system in complete accordance with and as defined in applicable national fire protection standards.
- B. Verification of Hydraulic Information
 - 1. The contractor shall perform hydrant flow tests to establish water supply availability. Water supply information shall be provided on shop drawings as outlined in NFPA 13.
 - 2. The contractor shall confirm that hazard classifications/density requirements conform with the owner's fire insurance underwriter's requirements and those of other authorities having jurisdiction.

- C. Accompanying Sprinkler shop drawings submitted to the architect shall bear all Sprinkler system requirements, water supply data, graph and work sheets all as defined by NFPA. The hydraulic graph shall include the following information:
1. Hydrant flow test curve.
 2. Adjust flow test for friction and elevation at new wet tap connection.
 3. System friction loss curve for Sprinkler system with inside hose stream.
 4. Available outside hose stream flow.
- D. All calculations shall assume a 10 psi deterioration in static and residual pressures in the hydrant flow test results.
- E. Velocity shall not exceed 20 fps.
- F. In addition to the above noted requirements, the hydraulic calculations shall include:
1. The hydraulically most remote area for each hazard classification/density requirements as noted on the contract documents.
 2. If combination risers are shown interconnected with Sprinkler piping, hydraulic calculations shall show the remote area being supplied solely from the hydraulically most remote combination riser.
 3. Additional hydraulic calculations shall be submitted, when requested, which demonstrate that the contractor's selected remote areas are indeed the hydraulically most demanding as well as remote.

3.4 Installation of Piping and Equipment

- A. Install the work of this section in compliance with the referenced NFPA standards. Coordinate installation with work of other sections and install piping level or pitched back to main riser or low point drain. Provide drain valve on trapped piping. Install all Sprinkler heads with return bend drops to ceilings.
- B. Install fire line piping generally as shown on the drawings. Run piping concealed above ceilings and within furred spaces. Take special care to locate risers within pipe chases as indicated on the architectural drawings. Obtain approval from the architect for piping locations which require furrings not indicated on the contract drawings. Provide pressure gauges with shut-off cock at top and base of risers.
- C. Provide 3/4" hose end drain valve with cap and chain at base of standpipe riser. Locate drain valve downstream of riser isolation valve.
- D. Install equipment and products provided under this section in compliance with the product listing and the manufacturer's installation instructions.
- E. Install chrome-plated escutcheons where piping passes through finished surfaces.

3.5 Installation and Spacing of Sprinkler Heads

A. Sprinkler head installation

1. Sprinkler spacing, densities and design shall comply with NFPA and the owner's insurance underwriter.

B. Location of Sprinkler heads in ceiling tiles:

1. Refer to architectural reflected ceiling plans and room finish schedules for ceiling tile types. Mount Sprinklers in center of tiles.
2. Align Sprinkler heads with ceiling components such as lighting fixtures, HVAC diffusers and smoke detectors.

C. Provide additional heads as required by NFPA 13, including appendices to protect areas where ceiling head Spray pattern is obstructed and below ducts and equipment 4 feet wide or wider. Mechanical room Sprinkler layouts shall be based on approved ductwork submittals. Additional Sprinkler heads required to provide complete Sprinkler protection due to obstructions and/or coordination shall be provided at no additional cost to the owner.

3.6 Valve Tags and Charts

- A. All valves on pipes of every description shall have neat circular brass valve tags of at least 1 1/2" in diameter, attached with brass hooks to each valve stem. Stamp on these valve tags in letters as large as practicable the number of the valve and the service and zone, such as "SPR", "d", for Sprinkler, drain, respectively. The numbers of each service shall be consecutive.
- B. These numbers shall correspond to numbers indicated for valves on the record drawings and on two printed detailed lists. These printed lists shall state the numbers and locations of each valve and the fixture or group of fixtures which it controls, and other necessary information, such as requiring the opening or closing of another valve or valves, when any one valve is to be opened or closed.
- C. These printed lists shall be typed and shall be framed under glass, and mounted as directed by the architect.
- D. Copies of charts shall be included in O&M manuals.

3.7 Identification

- A. All labeling of piping, materials and equipment, as outlined hereinafter for identification purposes, shall be performed by this contractor.
- B. Piping systems shall be identified with approved snap-on covers designating services and direction of flow. Location of identification covers shall be near access panels wherever possible on each riser and branch main, equipment, and on both sides of valves. The markers shall be as manufactured by WH brady co., Westline products, seton name plate co., or approved equal.

- C. Install markers on cleaned or painted piping only after piping is complete and has been accepted by the architect.
- D. Letters shall not be less than 1 1/2" in height. Arrows shall not be less than 9" long. Identification shall be installed on pipes above hung ceiling and furred spaces.
- E. All systems shall be identified at intervals of approximately 20", every change of direction and on both sides of wall where pipes pass through walls.

3.8 Core Drilling

- A. This contractor shall perform all core drilling required for the installation of the fire protection system. Locate all required openings and prior to coring coordinate the opening with the construction manager. Thoroughly investigate the existing conditions in the vicinity of the required opening prior to coring. Care must be taken so as not to disturb the existing building systems. Locate all other openings required for the construction manager. Patching of existing walls and openings shall be performed by the respective trade responsible for the finish material in which the opening is made.
- B. Before coring is performed, submit drawings showing location of cores to structural engineers for their review.

3.9 Cleaning of Systems

- A. Before the fire protection systems are accepted, all equipment shall be thoroughly cleaned to remove all dust, dirt, and/or other foreign matter which may be detrimental to the operation of the systems or building finishes. The system shall be cleaned with a solution of caustic soda, trisodium or approved equal.
- B. After the installation is complete, equipment with factory finished surfaces shall be cleaned. Damaged or scratched spots shall be touched up with the same type and color paint as applied at the factory.
- C. All equipment that is to receive finish paint by the painting contractor shall be cleaned by this contractor and left ready to have surfaces prepared to receive paint.

3.10 Equipment Access Requirements and Access Panels

- A. All work shall be installed so that all parts requiring inspection, operation, maintenance and repair are readily accessible as approved by the owner. Minor deviations from the drawing may be made to accomplish this, but changes of magnitude shall not be made prior to written approval from the architect.
- B. Furnish access panels if required in walls and ceilings as required to permit access for adjustment, removal and the replacement and servicing of all equipment, and all other items requiring maintenance and adjustments. Access panels shall be installed by the trade determined by the construction manager.
- C. Access panels shall be 12"x12" minimum size and constructed of steel with primer coat of rust inhibitive paint and shall have continuous piano hinge, as manufactured by inland steel products, milcor, Walsh Hannon or approved equal. Panel shall be key operated cylinders, keyed alike. Key lock system shall be coordinated with the owner and shall be as approved by the architect. Provide six (6) keys of type used for owner's use.

3.11 Signs

- A. Signs and nameplates in accordance with NFPA standards and/or this specification shall be provided at all drains, test and alarm valves and other areas as required by NFPA standards.

3.12 Cleanup

- A. After completion of the work, all tools and other equipment shall be removed from the building. All excess materials shall be removed and the building left broom clean. All cabinets, valves, and equipment shall be cleaned and polished.
- B. This contractor shall clean, patch and repair any material and finish of the building or its contents damaged during the execution of this contract.

3.13 Testing and Inspection

- A. This contractor shall obtain and pay for all the inspection and tests required for this section of the work. Defects discovered in work, materials and/or equipment shall be replaced at no cost to the owner, and the inspection and test shall be repeated. When work is completed, this contractor shall furnish a certificate of inspection and approval to the owner before final payment of the contract will be allowed.
- B. Test Sprinkler piping and make watertight before painting and before concealment. Make partial tests as required, during the progress of the work. All tests shall be witnessed by the owner's representative, authorities having jurisdiction and a representative of the engineer.
- C. Test systems according to provisions of NFPA standards and the additional requirements of the approving authority and this section.
- D. Modified Sprinkler system shall be tested to a hydrostatic test of 200 psi or 50 psi higher than the normal working pressure of the system for (2) hours without loss as specified in NFPA 13.
- E. This contractor shall, with the parties noted herein, establish procedures to witness testing that are acceptable to the parties noted herein. All parties noted herein shall be notified in writing of the accepted testing procedure prior to any testing. This contractor shall notify parties designated to witness testing at least 48 hours in advance of scheduled testing.
- F. Conditions requiring testing in excess of the minimum requirements noted herein shall be performed in accordance with NFPA standards and any requirements of authorities having jurisdiction.
- G. Should the owner, engineer or any authority having jurisdiction require, this contractor shall provide factory trained, manufactures authorized representatives to perform testing on any equipment and/or devices that may be an integral part of this specification.
- H. Dispose of test water and wastes after tests are complete, in a manner satisfactory to the owner and local authorities.
- I. Furnish to the engineer completely executed test certificates with signatures of those required to witness testing. Test certificate forms shall follow NFPA formats as a minimum requirement.
- J. Complete working tests of all systems in accordance with NFPA standards.

3.14 Demolition

- A. This subcontractor shall disconnect and remove all existing Sprinkler and piping in the building indicated when the phasing schedule allows same. Sprinkler systems shall remain unless otherwise indicate. These system shall be reconnect to with new piping serving same. Special attention must be given to the required phasing of the construction as it relates to fire protection.
- B. Disconnected piping shall be removed and neatly stockpiled where and, as directed by the general contractor, until material can be disposed of as required
- C. All disconnected and removed piping shall be plugged or capped back at main or riser. All unused branch piping must be removed.

End of Section 15300

SECTION 22 0719 - PLUMBING PIPING INSULATION

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Piping insulation.
- B. Jackets and accessories.

1.02 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus 2013.
- B. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation 2017.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2017.
- D. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.06 FIELD CONDITIONS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 - PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER

- A. Manufacturers:
 - 1. CertainTeed Corporation: www.certainteed.com.
 - 2. Johns Manville Corporation: www.jm.com.
 - 3. Owens Corning Corporation; Fiberglas Pipe Insulation ASJ: www.ocbuildingspec.com.
- B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
 - 1. K Value: ASTM C177, 0.24 at 75 degrees F.
 - 2. Maximum Service Temperature: 850 degrees F.
 - 3. Maximum Moisture Absorption: 0.2 percent by volume.
- C. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible, with wicking material to transport condensed water to the outside of the system for evaporation to the atmosphere.
 - 1. K Value: ASTM C177, 0.23 at 75 degrees F.
 - 2. Maximum Service Temperature: 220 degrees F.
 - 3. Maximum Moisture Absorption: 0.2 percent by volume.
- D. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches.

2.03 JACKETS

- A. PVC Plastic.
 - 1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum Service Temperature: 0 degrees F.
 - b. Maximum Service Temperature: 150 degrees F.
 - c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
 - d. Thickness: 10 mil.
 - e. Connections: Brush on welding adhesive.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
- C. Glass fiber insulated pipes conveying fluids below ambient temperature:
 - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
 - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- D. Glass fiber insulated pipes conveying fluids above ambient temperature:
 - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

3.03 SCHEDULES

- A. Plumbing Systems:
 - 1. Domestic Hot Water Supply: 1/2 inch.
 - 2. Domestic Cold Water: 1/2 inch.

END OF SECTION 22 0719

SECTION 22 1005 - PLUMBING PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Pipe, pipe fittings, specialties, and connections for piping systems.
 - 1. Sanitary sewer.
 - 2. Domestic water.
 - 3. Flanges, unions, and couplings.
 - 4. Pipe hangers and supports.
 - 5. Valves.

1.02 REFERENCE STANDARDS

- A. ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings - DWV 2016.
- B. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV 2012.
- C. ASTM B32 - Standard Specification for Solder Metal 2008 (Reapproved 2014).
- D. ASTM B306 - Standard Specification for Copper Drainage Tube (DWV) 2013.
- E. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube 2016.
- F. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings 2016.
- G. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings 2014.
- H. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications 2009 (Revised 2012).
- I. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications 2011 (Revised 2012).
- J. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2009.
- K. NSF 61 - Drinking Water System Components - Health Effects 2017.
- L. NSF 372 - Drinking Water System Components - Lead Content 2016.

1.03 SUBMITTALS

- A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
- B. Shop Drawings: For non-penetrating rooftop supports, submit detailed layout developed for this project, with design calculations for loadings and spacings.

- C. Project Record Documents: Record actual locations of valves.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.
- C. Identify pipe with marking including size, ASTM material classification, ASTM specification, water pressure rating.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 – PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- B. Piping materials to match existing.

2.02 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
- B. Copper Tube: ASTM B306, DWV.
 - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.23, sovent.
 - 2. Joints: ASTM B32, alloy Sn50 solder.

2.03 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2. Joints: ASTM B32, alloy Sn95 solder.

2.04 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 3 Inches and Under:
 - 1. Ferrous Pipe: Class 150 malleable iron threaded unions.
 - 2. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.

- B. No-Hub Couplings:
 - 1. Gasket Material: Neoprene complying with ASTM C564.
 - 2. Eyelet Material: Stainless steel.
- C. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.05 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
- B. Plumbing Piping - Drain, Waste, and Vent:
 - 1. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 - 2. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
- C. Plumbing Piping - Water:
 - 1. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.

2.06 BALL VALVES

- A. Manufacturers:
 - 1. Apollo Valves: www.apollovalves.com.
 - 2. Grinnell Products: www.grinnell.com.
 - 3. Nibco, Inc: www.nibco.com.
- B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

- B. Provide non-conducting dielectric connections wherever joining dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Group piping whenever practical at common elevations.
- E. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- F. Provide access where valves and fittings are not exposed.
- G. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- H. Sleeve pipes passing through partitions, walls, and floors.

3.03 APPLICATION

- A. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

3.04 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.
- B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

3.05 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Flush and clean system following the completion of work.

3.06 SCHEDULES

- A. Pipe Hanger Spacing:
 - 1. Metal Piping:
 - a. Pipe Size: 1/2 inches to 1-1/4 inches:
 - 1) Maximum Hanger Spacing: 6.5 ft.
 - 2) Hanger Rod Diameter: 3/8 inches.
 - b. Pipe Size: 1-1/2 inches to 2 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 3/8 inch.

END OF SECTION 22 1005

SECTION 22 4000 - PLUMBING FIXTURES

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Sinks.
- B. Faucets.

1.02 RELATED REQUIREMENTS

- A. Section 22 1005 - Plumbing Piping.

1.03 SUBMITTALS

- A. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- B. Manufacturer's Instructions: Indicate installation methods and procedures.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

PART 2 – PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with applicable codes for installation of plumbing systems.

2.02 SINKS

- A. Sink Manufacturers:
 - 1. Kohler Company: www.kohler.com.
 - 2. Blanco; Quatrus R0 ADA Model: www.blanco.com.
- B. Single Compartment Bowl: ADA, ASME A112.19.3; 23” by 16” inside dimensions, 5-1/2” deep undermount, satin brushed finish.

2.03 FAUCETS

- A. Supply Faucet Manufacturers:
 - 1. Kohler Company; Purist: www.kohler.com.
 - 2. Blanco: www.blanco.com.
- B. Supply Faucet: ASME A112.18.1, ADA; professional style with coated hose, removable coil, and three function spray head. 1.5-gpm flow rate at 60-psi.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Confirm that millwork is constructed with adequate provision for the installation of sinks.

3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 CLEANING

- A. Clean plumbing fixtures and equipment.

3.07 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Do not permit use of fixtures by construction personnel.
- C. Repair or replace damaged products before Date of Substantial Completion.

3.08 SCHEDULES

A. Fixture Rough-In

1. Sink:

- a. Hot Water: 1/2 Inch.
- b. Cold Water: 1/2 Inch.
- c. Waste: 1-1/2 Inch.
- d. Vent: 1-1/2 Inch.

END OF SECTION 22 0719

SECTION 23 0553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Tags.

1.02 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2007.
- B. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2013.

PART 2 – PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Dampers: Ceiling tacks, where located above lay-in ceiling.
- B. Ductwork: Duct markers.
- C. Dampers: Final TAB position stamp.

2.02 ADHESIVE-BACKED DUCT MARKERS

- A. Manufacturers:
 - 1. Brimar Industries, Inc: www.pipemarker.com.
- B. Material: High gloss acrylic adhesive-backed vinyl film 0.0032 inch; printed with UV and chemical resistant inks.
- C. Style: Individual Label.
- D. Color: Yellow/Black.

2.03 CEILING TACKS

- A. Description: Steel with 3/4 inch diameter color coded head.
- B. Color code as follows:
 - 1. HVAC Equipment: Yellow.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 SCHEDULE

- A. Identify all new equipment, ductwork, and controls.

END OF SECTION 23 0553

SECTION 23 0593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Testing, adjustment, and balancing of air systems.

1.02 REFERENCE STANDARDS

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.
- B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008.
- C. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems; 2015, with Errata (2017).
- D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2002.

1.03 SUBMITTALS

- A. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
 - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Engineer and for inclusion in operating and maintenance manuals.
 - 3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
 - 4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
 - 5. Units of Measure: Report data in I-P (inch-pound) units only.
 - 6. Include the following on the title page of each report:
 - a. Name of Testing, Adjusting, and Balancing Agency.
 - b. Address of Testing, Adjusting, and Balancing Agency.
 - c. Telephone number of Testing, Adjusting, and Balancing Agency.
 - d. Project name.
 - e. Project location.
 - f. Report date.

PART 2 - PRODUCTS - NOT USED

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Perform total system balance in accordance with one of the following:
 - 1. AABC (NSTSB), AABC National Standards for Total System Balance.
 - 2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.

3. SMACNA (TAB).
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
 2. Having minimum of three years documented experience.
 3. Certified by one of the following:
 - a. AABC, Associated Air Balance Council: www.aabc.com/#sle; upon completion submit AABC National Performance Guaranty.
 - b. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#sle.
- D. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.

3.02 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
 1. Systems are started and operating in a safe and normal condition.
 2. Temperature control systems are installed and operable.
 3. Proper thermal overload protection is in place for electrical equipment.
 4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
 5. Duct systems are clean of debris.
 6. Fans are rotating correctly.
 7. Fire and volume dampers are in place and open.
 8. Access doors are closed and duct end caps are in place.
 9. Air outlets are installed and connected.
 10. Duct system leakage is minimized.
- B. Beginning of work means acceptance of existing conditions.

3.03 PREPARATION

- A. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Engineer to facilitate spot checks during testing.
- B. Request additional balancing devices necessary to properly balance system.

3.04 ADJUSTMENT TOLERANCES

- A. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.05 RECORDING AND ADJUSTING

- A. Ensure recorded data represents actual measured or observed conditions.
- B. Permanently mark settings of dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

- C. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- D. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.06 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities. Design airflows are based on RTU performance indicated on the original design drawings.
- B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross-sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
- F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.
- G. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions. Record outside air damper position corresponding to minimum outside air CFM and communicate to building automation system contractor for programming.
- H. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.
- I. Repeat Air System Procedure at various outside air volume requirements. For each test measure mixed air plenum pressurization and note it on the TAB report. Note whether damper position adjustments are required to achieve proper pressurization and coordinate with Owner, and Engineer as required to implement required changes.
- J. Coordinate with the BAS contractor to command each RTU into full cooling mode with 0% outside air. Verify that the units provide design supply air volume.

3.07 SCOPE

- A. Test, adjust, and balance the following:
 - 1. Air Handling Units.
 - 2. Air Inlets and Outlets.
- B. Support other trade contractors during their installation, testing, and commissioning.

3.08 MINIMUM DATA TO BE REPORTED

- A. Air Moving Equipment:
 - 1. Manufacturer.
 - 2. Model number.
 - 3. Serial number.

4. Arrangement/Class/Discharge.
 5. Air flow, specified and actual.
 6. Return air flow, specified and actual.
 7. Outside air flow, specified and actual.
 8. Total static pressure (total external), specified and actual, min and max flow rate, pressure drop, BHP, and VDF settings.
 9. Total static pressure, BHP, flow rate, and VFD setting at minimum flow.
 10. Inlet pressure.
 11. Discharge pressure.
 12. Sheave Make/Size/Bore.
 13. Number of Belts/Make/Size.
 14. Design Fan RPM.
 15. Actual Fan RPM.
- B. Duct Leak Tests:
1. Description of ductwork under test.
 2. Duct design operating pressure.
 3. Duct design test static pressure.
 4. Duct capacity, air flow.
 5. Maximum allowable leakage duct capacity times leak factor.
 6. Test static pressure.
 7. Test orifice differential pressure.
 8. Leakage rate.
 9. Sources of leaks.
 10. Sources of major leaks.

END OF SECTION 23 0593

SECTION 23 0713 - DUCT INSULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Duct liner.

1.02 REFERENCE STANDARDS

- A. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material); 2016.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.
- C. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- D. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).
- E. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section with not less than three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.06 FIELD CONDITIONS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 - PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 DUCT LINER (USED ON INTERIOR SUPPLY DUCTWORK)

- A. Manufacturers:
 - 1. Johns Manville: www.jm.com.
 - 2. Knauf Insulation: www.knaufinsulation.com.
 - 3. Owens Corning Corporation; QuietR Rotary Duct Insulation: www.ocbuildingspec.com.
 - 4. CertainTeed Corporation: www.certainteed.com.
- B. Glass Fiber Insulation: Non-corrosive, incombustible glass fiber complying with ASTM C1071; flexible blanket, rigid board, and preformed round liner board; impregnated surface and edges coated with poly vinyl acetate polymer, acrylic polymer, or black composite.
 - 1. Fungal Resistance: No growth when tested according to ASTM G21.
 - 2. Apparent Thermal Conductivity: Maximum of 0.31 at 75 degrees F.
 - 3. Thickness: 1 inch.
 - 4. Service Temperature: Up to 250 degrees F.
 - 5. Rated Velocity on Coated Air Side for Air Erosion: 5,000 fpm, minimum.
 - 6. Minimum Noise Reduction Coefficients:
 - a. 1.5 inch Thickness: 0.45.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that ducts have been tested before applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Perform duct leakage testing before insulating.
- D. Interior Duct Insulation Application:
 - 1. Adhere insulation with adhesive for 100 percent coverage.
 - 2. Secure insulation with mechanical liner fasteners. Refer to SMACNA (DCS) for spacing.
 - 3. Seal and smooth joints. Seal and coat transverse joints.
 - 4. Duct dimensions indicated are net inside dimensions required for air flow. Increase duct size to allow for insulation thickness.

END OF SECTION 23 0713

SECTION 23 3100 - HVAC DUCTS AND CASINGS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Metal ductwork.
- B. Flexible ductwork.
- C. Duct cleaning.

1.02 RELATED REQUIREMENTS

- A. Section 23 0593 - Testing, Adjusting, and Balancing for HVAC.
- B. Section 23 0713 - Duct Insulation: External insulation and duct liner.

1.03 REFERENCE STANDARDS

- A. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; 2017.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip; 2017.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.
- F. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2015.
- G. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).
- H. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual; 2012.

1.04 SUBMITTALS

- A. Product Data: Provide data for duct materials.
- B. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA (LEAK).
- C. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience, and approved by manufacturer.

1.06 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 – PRODUCTS

2.01 DUCT ASSEMBLIES

- A. Regulatory Requirements: Construct ductwork to comply with NFPA 90A standards.
- B. Ducts: Galvanized steel, unless otherwise indicated.
- C. Low Pressure Supply: 1 inch w.g. pressure class, galvanized steel.
- D. Low Pressure Return: 1 inch w.g. pressure class (negative), galvanized steel.

2.02 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
- B. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
 - 1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
 - 2. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
- C. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.03 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install in accordance with manufacturer's instructions.
- C. After fabrication, provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- D. Flexible Ducts: Connect to metal ducts with adhesive.

- E. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- F. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- G. Use double nuts and lock washers on threaded rod supports.
- H. Connect terminal units to supply ducts directly or with one foot maximum length of flexible duct. Do not use flexible duct to change direction.

3.02 CLEANING

- A. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment that could be harmed by excessive dirt with temporary filters, or bypass during cleaning.

END OF SECTION 23 3100

SECTION 23 3300 - AIR DUCT ACCESSORIES

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Flexible duct connectors.
- B. Volume control dampers.

1.02 RELATED REQUIREMENTS

- A. Section 23 3100 - HVAC Ducts and Casings.

1.03 REFERENCE STANDARDS

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2015.
- B. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

PART 2 - PRODUCTS

2.01 FLEXIBLE DUCT CONNECTORS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Flexible Duct Connections: Fabric crimped into metal edging strip.
- C. Maximum Installed Length: 36 inch.

2.02 VOLUME CONTROL DAMPERS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Single Blade Dampers:
 - 1. Fabricate for duct sizes up to 6 by 30 inch.
 - 2. Blade: 24 gage, 0.0239 inch, minimum.
- C. Quadrants:
 - 1. Provide locking, indicating quadrant regulators on single and multi-blade dampers.
 - 2. On insulated ducts mount quadrant regulators on stand-off mounting brackets, bases, or adapters.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 3100 for duct construction and pressure class.
- B. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.

- C. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.
- D. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.

END OF SECTION 23 3300

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SECTION 260000 - ELECTRICAL

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

- A. Applicable provisions of “General Conditions” govern work under this section.
- B. The Electrical Contractor shall review all other sections of these Specifications for requirements therein affecting the work of this Section.
- C. The Electrical Contractor shall conform to all sections of these Specifications and Drawings.
- D. Contractor’s duties for work specified below shall include compliance with all Codes, Ordinances, Rules, Regulations, Orders and all other requirements of Authorities, which bear on performance of work.

1.2 SCOPE OF WORK

- A. Furnish all labor, supervision, permits, certificates, materials, equipment, apparatus, accessories, supplies, tools, transportation and services necessary for and incidental to, all electrical work as shown on the Drawings and/or specified hereinafter to the full completion of installation and operation of the electrical system.
- B. The principal items of work are as follows;
 - 1. Temporary Service
 - 2. Secondary Power Service
 - 3. Cable Television Service
 - 4. Telephone Service
 - 5. Fire Alarm Service
 - 6. Grounding
 - 7. Power and lighting distribution panels
 - 8. Load Centers
 - 9. Lighting fixtures and lamps
 - 10. Lighting controls
 - 11. Safety switches
 - 12. Feeders to panels, load centers and equipment
 - 13. Branch circuit wiring
 - 14. Outlet boxes, receptacles, etc.
 - 15. Fire Stopping
 - 16. Telephone System
 - 17. Fire Alarm System Command Center
 - 18. Intercom System
 - 19. Security System
 - 20. Emergency Lighting System
 - 21. All wiring for heating ventilating equipment, wherever required and as indicated on Drawings
 - 22. Voice/Data wiring
 - 23. Cable Television Wiring

24. All other systems, equipment and work hereinafter specified and/or shown on the Contract Drawings.
- C. It is the intent of the Specifications and the accompanying Drawings that the systems shall be furnished and installed complete. The Electrical Contractor shall furnish and install all conduit, wire, boxes, equipment, devices and controls needed and usually furnished in connection with such work, whether specifically mentioned or not.
- D. The drawings and specifications are complimentary to each other. When a conflict arises between the specification and the drawings and/or within the drawings the more costly scenario shall prevail until clarification from the engineer has been established.
- E. This Contractor shall refer to the Architectural, Structural, Plumbing, Mechanical and Fire Protection Drawings and all other Drawings associated with the project, prior to the installation or roughing of the electrical outlets, conduit and equipment to determine the exact location of all outlets.

1.3 WORK NOT INCLUDED

- A. The following items of labor and material incidental and/or related to the installation of the electrical work will be provided and/or installed under other sections of the Specification.
1. All cutting, patching and furring.
 2. Painting of all equipment and material other than factory finished.
 3. Flashing
 4. Excavation and backfill.
 5. Concrete work.

1.4 DEFINITIONS

- A. The "Electrical Contractor" specifically means, the Contractor working under this section for the specifications.
- B. "Furnish and install" or "provide" means to supply, erect, install and connect up complete, in readiness for regular operation, the particular work referred to unless otherwise specified.
- C. "Piping" includes, in addition to pipe, all fittings, boxes, hangers and other accessories relating to such piping.
- D. "Concealed" means hidden from sight, in chases, furred spaces, shafts, hung ceilings and embedded in construction.
- E. "Exposed" means visible in sight, not installed "concealed" as defined above.
- F. "Approved Equal" means any equipment or material which is equal in quality, durability, appearance, strength, design and performance to the equipment or material specified and which will function adequately in accordance with the general design and is approved by the engineer.

1.5 CODES AND STANDARDS

- A. Unless otherwise specified or indicated, materials and workmanship shall conform to the latest edition of the following Standards, Codes, specifications, Requirements and Regulations.
1. National Electrical Code 2020
 2. Rhode Island Electrical Code
 3. National Electrical Contractors' Association.
 4. National Electrical Manufacturer's Association

5. International Building Code
6. International Energy Conservation Code
7. Underwriters' Laboratories, Inc.
8. National Fire Protection Association
9. Local Wiring Inspector
10. Local Fire Marshall
11. All other State and Local Codes and/or Authorities having jurisdiction, including any and all other paragraphs of this Specification.

1.6 PERMITS AND FEES

- A. The Electrical Contractor shall secure and pay for all required permits and fees. All Utility Company back charges shall be paid by the owner prior to work being started.
- B. The Electrical Contractor shall carry in his bid price and pay all costs incurred for, standard and special tests to be performed in conjunction with this Contract that are necessary for and incidental to, the accomplishment of his work and the use of work when completed.
- C. The Electrical Contractor shall, after completion, furnish to the General Contractor a Certificate of Final Inspection and Approval from the Local Electrical Inspection Department.

1.7 MATERIALS AND WORKMANSHIP

- A. Materials and workmanship shall be the best of their respective kinds and in full accordance with the most modern construction methods.
- B. Electrical materials and equipment of types for which there are Underwriters' Laboratories standard requirements, listings or labels, shall conform to their requirements and be so labeled.

1.8 TESTS

- A. The right is reserved to conduct acceptance tests of all equipment, wiring or any other work furnished under these Drawings and/or Specifications to determine the fulfillment of specific requirements and/or design.
- B. The Electrical Contractor shall conduct all such tests in the presence of authorized representatives of the Owner and at such times that the Owner may designate.
- C. The Electrical Contractor shall perform all tests, supply all instrumentation, personnel and make all adjustments of equipment and wiring as may be necessary. The Electrical Contractor in the presence of the Owner's representative shall take insulation resistance reading of all equipment and circuits. Megger readings of less resistance than the recommended minimum as called for by the National Electric Code shall be required or conductors shall be replaced by this Contractor at no cost to the Owner.

1.9 PORTABLE OR DETACHABLE PARTS

- A. The Electrical Contractor shall retain in his possession and shall be responsible for, all portable and/or detachable parts and portions of the installation, including fuses, keys, locks, adapters, blocking clips, inserts, lamp instruction, drawings and all other devices or materials that are relative to and necessary for the proper operation and maintenance of the electrical system until final completion of his work.
- B. The Electrical Contractor shall replace all stolen, lost or damaged items relative to the installation and operation of the electrical system at his own expense before the building is accepted by the Owner.

1.10 PROTECTION AND CLEANING OF EQUIPMENT

- A. All electrical equipment, upon receipt, shall be adequately stored and protected from damage.
- B. After inspection, all electrical equipment shall be protected to prevent damage during the construction period. Openings in all conduits, raceways, fittings and boxes shall be closed to prevent entrance of foreign materials.
- C. Before completion of work and before final inspection, all damaged and/or defective equipment and material shall be replaced, and all exposed surfaces of electrical equipment shall be clean.

1.11 DRAWINGS AND SPECIFICATIONS

- A. The Drawings and these Specifications are complimentary to each other and any labor or material called for by either, whether or not by both, necessary for the successful operation of any of the particular types of equipment furnished under this Contract, shall be furnished and installed.
- B. Before installing any of the electrical work, see that it does not interfere with the clearances required for existing finished columns, pilasters, partitions, or walls. Installed work, which interferes with other trades, shall be changed as directed by the Owner's representatives. All costs incidental to such changes shall be paid by the Electrical Contractor.

1.12 OBTAINING INFORMATION

- A. Obtain detailed information from the manufacturers of apparatus, which he is to furnish and install as to the proper method of installing and connecting same. Obtain all required information from the Owner's representative and other Subcontractors necessary to facilitate and complete the electrical work. Check all other Contract Drawings and all other sections of Contract Specifications for electrical equipment requiring connections and electrical characteristics of equipment should they differ from the Electrical Drawings.

1.13 SAFETY PRECAUTIONS

- A. The Electrical Contractor shall furnish, place and maintain power guards and other necessary construction, required for the prevention of accidents to secure safety of life and/or property.

1.14 REMOVAL OF RUBBISH

- A. After completion of the work, the Electrical Contractor shall remove all waste, rubbish and other materials left as a result of his operations and leave the premises in clean condition.
- B. In addition to the cleaning up required in the Special Provisions, the Electrical Contractor shall, at the completion of the work, clean, polish, and/or wash all exposed items or materials, equipment and fixtures in this Contract, so as to leave such items bright and clean.
- C. The Electrical Contractor shall repaint any painted metal surfaces, which have been scratched, dented, or marred.

1.15 COORDINATION OF TRADES

- A. The Electrical Contractor shall give full cooperation to other trades and shall furnish (in writing, with copies to Engineers) any information necessary to permit the work of all trades to be installed satisfactorily and with least possible interference or delay.
- B. Where the work of the Electrical Contractor will be installed in close proximity to work of other trades or where there is evidence that this Contractor will interfere with the work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Designer, the Contractor shall prepare composite working Drawings and sections at a suitable scale not less than a quarter-inch equals one-foot ($\frac{1}{4}''=1'-0''$), clearly showing how his work is to be

installed in relation to the work to correct the condition without extra charge. All cutting and patching, excavation and backfill shall be done by the General Contractor. The Contractor shall inform the General Contractor well in advance as to his requirements.

- C. The Electrical Contractor shall be responsible for phasing the electrical installation in accordance with the General Contractor and the construction schedule.

1.16 VISITING THE SITE

- A. The Electrical Contractor shall be required to visit the site and examine the existing conditions, which may affect his work under this Contract. Failure to do so shall be his responsibility and no claims for extra compensation or extension of time shall be allowed because of lack of compliance herewith.
- B. The Electrical contractor shall familiarize himself with each portion of each building and how the phasing may affect the electrical installation.

1.17 FIELD MEASUREMENTS

- A. The Electrical Contractor shall verify in the field all measurements necessary for his work and shall assume responsibility for their accuracy.

1.18 GUARANTEE

- A. The Electrical Contractor guarantees by his acceptance of the Contract that all work installed will be free from any and all defects in workmanship and/or materials during period of one (1) year from date of Certificates of Completion and acceptance of work. If any such defects in workmanship or material appear, he will, without cost to the Owner, remedy such defects within a reasonable time.

1.19 SHOP DRAWINGS AND SAMPLES

- A. Before ordering material shipped to the job, the Electrical Contractor shall submit to the General Contractor for approval manufacturers references and bulletins, Shop Drawings, in sextuplet, giving all details, dimensions, etc. of the following;
 1. Main Service equipment
 2. Main Distribution Panel, Panelboards and Load Centers
 3. All lighting fixtures and lamps
 4. Time Controllers
 5. Disconnect switches
 6. Fire Alarm equipment (all components)
 7. Emergency Lighting System equipment
 8. Building Cable, wire, Conduit and electrical commodities
 9. Cable Television System equipment and cable
 10. Tel/Data System equipment and wiring
 11. Wiring Devices (each type)
 12. Lighting Controls and Lighting Control Panel
 13. Intercom System
- B. The Electrical Contractor shall also furnish samples of plug receptacles, light switches and other small parts as requested by the Architect.
- C. Should the Electrical Contractor choose to substitute for the specified equipment, the Shop drawing submittals must include catalog cuts of originally specified equipment. Shop Drawings submitted for approval without all of the required information will not be considered for approval.

1.20 SUPERINTENDENCE OF WORK

- A. The Electrical Contractor shall give his personal superintendence to the work and shall retain at the job site during the period of construction, a competent Foreman, satisfactory to the Contractor, who shall be in full charge of the work under this section.

1.21 STORAGE OF MATERIALS

- A. The Electrical Contractor shall store his material and equipment before installation only where designated by the General Contractor. He shall be responsible for all his property stored on the premises and shall hold the General Contractor free from liability for loss by theft or carelessness of employees of the General contractor or of other Sub-Contractors. The Electrical Contractor shall take particular care to protect any finished work for injury or defacement and must remedy, at his expense, any injury caused thereto by his operations.

1.22 RECORD DRAWINGS

- A. The Electrical Contractor shall maintain at the site a set of black line prints on which shall be accurately shown the actual installation of work under this section of the specifications. The drawings shall indicate any variation, approved by the General contractor, from the Contract Drawings, including changes in sizes, locations and dimensions. The Electrical Contractor shall deliver to the General Contractor for submittal to the Owner, a complete set of reproducible Record Drawings, showing the entire work as actually installed and two (2) sets of black or blue line on white prints.

1.23 CONTRACT DRAWINGS

- A. The Contract Drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangements of equipment, conduits, piping and fixtures.
- B. If directed by the General Contractor, the Electrical Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.
- C. All wiring device locations in dwelling units shall comply with the spacing requirements of Article 210 of the National Electrical Code whether or not shown on the drawings. Reasonable modifications to the locations are acceptable due to structural framing and/or wall stud locations.

1.24 TEMPORARY SERVICE

- A. Furnish and erect a suitable backboard for temporary meters and switches to measure and control current for testing, wiring, motors and other appliances; for temporary lighting, machines or the apparatus used in the construction of the building, until such time as the permanent meter is installed. Furnish and mount on the temporary board, an approved service switch and do all necessary wiring to connect such circuits as required.
- B. Special heavy-duty circuits shall be paid for by the trade requiring same.
- C. Obtain city-wiring permit for the temporary wiring and pay all fees for same.

PART 2.00 – PRODUCTS

2.1 RIGID STEEL CONDUIT

- A. All rigid steel conduits shall have a hot-dipped galvanized coat plus a secondary coat, galvanized threads, bear an Underwriters' Laboratories label and shall conform to Federal Specifications WW-C-581d and American Standards Association Specification C80.1. The conduit shall be fully threaded at both ends and each length shall be furnished with one standard threaded coupling. The use of threadless conduit couplings and fittings will not be permitted. Threaded split couplings of the bolted clamp type are permitted. Rigid steel conduit shall be used for all power wiring where indicated.
- B. Galvanized rigid steel conduit sweeps and quarter bends shall be installed at the pad mounted transformers and at the utility company poles. Each sweep to a pole shall extend ten feet up the pole with galvanized rigid steel conduit.
- C. Galvanized rigid steel conduit shall be installed where conduit needs to pass under roadways.

2.2 ELECTRICAL METALLIC TUBING

- A. Electrical metallic tubing shall be Electro-galvanized outside and enameled inside. All electrical metallic tubing shall bear an Underwriters' Laboratories label and shall conform to Federal Specifications WW-C-563 and American Standards Association Specification C80-3.
- B. Couplings and fittings for EMT shall be of the compression type or setscrew type. EMT shall not be installed embedded in concrete, outdoors or in wet locations.
- C. Any exposed wiring within any of the buildings shall be installed in Electrical Metallic Tubing.

2.3 FLEXIBLE METALLIC CONDUIT

- A. Flexible metal conduit shall be galvanized steel and shall contain an integral copper-grounding conductor. Liquid-tight flexible metal conduit shall be similar but shall also have an extruded moisture and oil-proof outer jacket of polyvinyl chloride plastic.
- B. Flexible metal conduit shall be utilized on all vibrating electrical equipment and shall be no greater than three feet in length.
- C. Liquid-tight flexible conduit shall be utilized on final connections to any outdoor equipment.

2.4 PVC CONDUIT

- A. Plastic conduit shall be PVC Schedule 40, iron pipe size, rigid polyvinylchloride equal to or better than ASTM Pipe Material ASTM PVC conduit Type 2, Grade 1, ASTM PVC 2110, Specification P- 1785, Underwriters' Laboratory, Inc. approved for lengths beyond ten (10) feet shall be identical to the approved conduit. Where elbows are used, they shall be long radius type. PVC Conduit shall be manufactured by Kraloy, Barrett Division of Allied Chemical, Pittsburgh; Triangle Cable and Conduit Co., or approved equal.
- B. Schedule 40 PVC conduits shall be installed in concrete buried in earth as indicated on the drawings.

2.5 WIREWAYS

- A. Totally enclosed sheet steel wireways, complete with all fittings, tees, elbows, wire retainers, closure plates, hangers, and component parts required for a complete installation shall be installed in all areas indicated on the Drawings and as required to facilitate the installation of

- the electrical systems.
- B. Physical size, length, and internal cross-sectional areas, of the wireways shall be determined in the field by the Electrical Subcontractor to suit field conditions unless noted otherwise on the Drawings.
 - C. The wireway systems shall be constructed of code gauge galvanized sheet steel with hinged cover. Straight sections of the wireway system shall be constructed of two separate pieces of sheet steel. One piece shall be used to form the sides and top, the other to form the cover. Captive screws, furnished as a part of the wireway system, shall be used for sealing at all hinged covers and coupling at straight sections or fittings.
 - D. All fittings, elbows, tees, and straight sections of the wireway shall be provided with smooth and round edges to protect the wiring from abrasion. All welded seams and joints shall be ground and polished to remove burred edges.
 - E. A bonding jumper consisting of an insulated flexible #8 AWG copper conductor with soldered eyelet on each end shall be provided to bond and ground the wireway at each joining section of the wireway system. The bonding jumpers shall be attached to each section by means of a bolt, locknut, and washer. The Electrical Subcontractor shall remove the paint from the wireway at the contact points so that positive contact shall be made between the bare metals at each grounding point.
 - F. The wireway system shall be provided with ½ inch and ¾ inch concentric knockouts every 6 inches on center along the top and ½ inch, ¾ inch, 1 inch, and 1-1/4 inches concentric knockouts every 6 inches along both sides.
 - G. All sheet metal posts shall be factory primed with rust inhibiting phosphor coating and finished with USASI #24 dark gray enamel. All hardware shall be cadmium-plated to prevent rusting and corrosion.
 - H. All lengths, connectors, and fittings of the wireway systems shall be UL approved and bear the Underwriters' Laboratories label. UL listing of lengths without listing of connectors and associated components or fittings shall not be acceptable.
 - I. The wireway system, all component parts and fittings, shall be by one manufacturer and shall be manufactured by Kelek, Lee Products, or Keystone.

2.6 OUTLET, PULL AND JUNCTION BOXES

- A. The locations of all wall switch boxes shall be coordinated with the Drawings and Project Manager before installation of same. All switch boxes unless specifically noted otherwise on the Drawings shall be opposite the hinged side of the door for all single doors.
- B. The location of outlets shown on Drawings is approximate. The Electrical Contractor shall study the building plans in relation to the spaces and equipment surrounding each outlet, so that receptacles, switches, lighting fixtures, devices, or other electrical components are symmetrically located and mounted in or on the walls, ceiling, and floor. Spacing of the devices within the dwelling units shall be in accordance with Article 210 of the national Electrical Code.
- C. Outlet, junction or pull boxes, shown on the Drawings, that interfere with the installation of mechanical equipment, structural or architectural features, or that will be inaccessible due to the work of other trades shall be relocated accordingly.
- D. Outlet, junction or pull boxes that are not specifically shown on the Drawings but are required for the proper installation of the electrical system shall be installed by the Electrical Contractor,

- so that they do not interfere with the structural or architectural features and the installation of materials by the other trades.
- E. Any reasonable change in the location of outlets, pull or junction boxes requested by the Architect, prior to roughing, shall not involve additional expense to the Owner.
 - F. All outlet, pull and junction boxes shall be installed in a rigid and satisfactory manner and shall be supported by bar hangers in frame constructions or shall be fastened directly with wood screws or 16 penny nails on wood, bolts with expansion shields on concrete or brick, toggle bolts on hollow masonry units and machine screws or welded threaded studs on metal. Threaded studs of the proper type and holding capacity driven in by a powder charge and provided with lock washers and nuts are acceptable for mounting of boxes on solid concrete walls or slabs. Preset inserts of the proper type and holding capacity shall be used in overhead slab construction wherever possible for the support of pull and junction boxes.
 - G. Feeders passing through pull or junction boxes shall be individually grouped and bound with tie-raps. The feeders in each pull or junction box shall be properly tagged to clearly indicate their electrical characteristics, circuit number and panel designation. Cables shall be supported on suitable racks within the boxes and arranged in an orderly manner. Normal/Emergency circuits shall be installed in separate pull or junction boxes from Normal only circuits.
 - H. Flush mounted ceiling and wall outlet boxes shall be provided with the proper type extension rings, tile and plaster collars required to set flush with the finished surfaces of the ceiling or walls.
 - I. Outlet boxes shall, in general, be as follows:
 - 1. Recessed outlet boxes in non-hazardous locations shall be non-metallic, fiberglass impact resistant outlet boxes. Outlets shall be Tamper resistant. The boxes shall be constructed to withstand extreme temperatures. Boxes shall not melt or distort due to high heat or shatter in extreme cold. All the non-metallic boxes shall be rated for use within Fire Walls. Boxes shall be secured to wood studs with nails, to sheet metal studs with pierce point sheet metal screws or a universal "Z" hanger that allows the box to mount to wood or metal studs.
 - 2. Recessed outlet boxes for non-hazardous locations in areas where type "MC" cable is required shall be the pressed sheet steel, zinc coated, and cadmium plated type.
 - 3. Exposed, surface and pendant mounted outlet boxes or outlet boxes installed in normally wet locations shall be of the cast metal type with threaded hubs as manufactured by Crouse-Hinds, Appleton, Red Dot, or Russell and Stoll.
 - 4. Outlet boxes shall not be less than 1-1/2 inches deep unless shallower boxes are required by structural conditions and are specifically approved by the Architect.
 - 5. Ceiling and bracket outlet boxes shall not be less than 4 inch octagonal, except that smaller boxes may be used where required by the particular fixture to be installed. Flush or recessed fixture shall be provided with separate outlet boxes where required by the fixture terminal temperature requirements.
 - 6. Outlet boxes on the exterior of the building shall be provided with UL Listed weatherproof covers that allow a plug to be in place with the cover in closed position. Covers shall be single gang, horizontal duplex, "while-in-use" application in accordance with Article 406 of the National Electric Code and as manufactured by Thomas & Betts.
 - 7. Outlet boxes for general use, flush mounted in concrete work and walls in non-hazardous and normally dry locations, shall be manufactured by Allied Moulded Products, Inc., Steel City, Appleton, or Raco.
 - 8. All outlet boxes shall be sealed with an approved sealant or pads on all sides so that air flow

does not leak into the finished space from the wall or ceiling cavity. All finished outlet plates shall be caulked with Phenoseal or other approved caulking on all edges of each plate. Phenoseal color shall match the color of the faceplate.

- J. Pull and junction boxes shall, in general, be as follows:
1. Pull and junction boxes shall be constructed of code gauge galvanized sheet metal, of not less than minimum size required by the N.E.C. or other applicable Specification "STANDARDS" and shall be furnished with securely fastened covers. Boxes exceeding 48 inches in any direction shall be properly reinforced with angle iron stiffeners.
 2. Pull and junction boxes of other than standard manufacturer's trade size shall be manufactured by Steel City or Keystone.
 3. Standard trade size pull and junction boxes shall be produced by the manufacturers listed above as applicable.
 4. Pull and junction boxes to be installed in normally wet location areas shall be of the cast type with threaded hub and gasketed cover plate. The cast pull and junction boxes shall be manufactured by Crouse-Hinds, or Appleton.
- K. Outlet, pull, and junction boxes shall be properly sealed during the course of construction to prevent the entrance of dirt and foreign materials within same or the raceway system of which it is a part. The Electrical Contractor shall provide temporary covers for all open boxes. Paper may be solidly packed into standard work boxes to prevent the entrance of dirt and foreign materials, in lieu of cover plates if so elected by the Electrical Contractor.

2.7 AIR VAPOR BARRIER BOX

- A. Electrical contractor shall provide air-vapor barrier boxes at outlet boxes installed within any vapor barrier to provide airtight construction around all the outlets.
- B. The air-vapor barrier boxes shall be made of rigid polyethylene with a hinge feature to allow easy installation of any standard electrical outlet box.
- C. The air-vapor barrier boxes shall be installed by the electrical contractor and sealed by their sealing contractor.
- D. The air-vapor barrier boxes shall be designed and installed to protect the seal made around the wires that enter or leave the box.
- E. The air-vapor barrier box shall allow for inspection and verification of a complete seal with air vapor barrier material before the wall is closed. This shall be coordinated in the field with the air sealing contractor.

2.8 FIRE STOPPING

- A. Electrical contractor shall provide Intumescent fire stopping all around each conduit that penetrates a rated wall, floor and/or ceiling. Fire stop putty shall allow ten percent (10%) movement and be water-based intumescent acrylate and have a shelf life of 12 months. The fire stopping shall be skin forming within 15 minutes and have an application temperature from five-degrees Centigrade (5° C) to forty-degrees Centigrade (40°C). Fire stopping shall be manufactured by Hilti.
- B. Fire stop putty pads shall be installed around outlet boxes that are located on party walls and/or fire rated walls or ceiling assemblies. Putty pads shall be intumescent, non-conductive, synthetic rubber and free from asbestos. The putty pads shall have an application temperature from 5

degrees C to 35 degrees C and a reaction temperature of 140 degrees C with a shelf life of 24 months. Putty pads shall be FM and UL 263 approved and manufactured by Hilti.

2.9 METAL CLAD CABLE

- A. All conductor wires and cables for secondary circuits shall consist of thoroughly tinned 98 percent conductivity copper, with 600-volt thermoplastic-covered (75 degrees C) insulation with an interlocked metal sheath, manufactured in strict accordance with the requirements of the Board of Underwriters' and the A.I.E.E.
- B. Wires, #10/2 w/GRD., #12/2 w/GRD., and #14/2 w/GRD., Metal Clad cable, type "MC", shall be type "THHN" solid, unless otherwise noted or shown on plans; sizes #6 AWG and larger shall be stranded Type "THHN".
- C. No wire smaller than 14/2 w/GRD. metal clad cable shall be used for any branch circuit. Larger sizes shall be used where so indicated on the plans.
- D. All wire shall be color-coded.
- E. All wire and cable shall be as manufactured by General Cable, Rome Cable, Anaconda, or approved equal.
- F. Type MC cable shall not be used in concrete, direct buried in earth or where exposed to chemical vapors.
- G. Type MC cable can be used as panel feeders, branch circuits, run exposed, run concealed, in raceway, as open runs above ceilings, etc.
- H. Type MC cable shall be secured by insulated staples, cable-ties, straps and/or hangers at intervals not to exceed 6'-0' on center and within 12" of every cabinet, box or fitting.
- I. In addition to the line and neutral conductors, all Metal Clad cable shall be equipped with a full size, green insulated ground conductor that runs the entire length of every branch circuit. Type "AC" shall not be permitted.

2.10 NON-METALLIC SHEATHED CABLE

- A. All conductor wires and cables for secondary circuits shall consist of thoroughly tinned 98 percent conductivity copper, with 600-volt thermoplastic covered (75 degrees C) insulation manufactured in strict accordance with the requirements of the Board of Underwriters' and A.I.E.E.
- B. Wires, #10-2 w/GRD., #10-3 w/GRD., #12-2 w/GRD. and #12-3 w/GRD. Non-metallic sheathed cable shall be type "TW" solid, unless otherwise noted or shown on the plans. Wire sizes #6 AWG and larger shall be stranded Type "THW". Wires underground or in slabs on grade shall be "THW" in concrete encased conduit, unless shown or noted otherwise.
- C. No wire smaller than 14-2 w/GRD., non-metallic sheathed cable shall be used for any branch circuit. Larger sizes shall be used where so indicated on the Plans.
- D. All wire shall be color coded.
- E. All wire and cable shall be as manufactured by General Cable, American Flexible Cable Company, Anaconda, or approved equal.
- F. Type NM cable shall not be used in concrete, direct buried in earth or where exposed to chemical vapors.
- G. Type NM cable can be used for branch circuits, run exposed, run concealed, in raceway, as

open runs above ceilings, etc.

- H. Type NM cable shall be secured by insulated staples, cable-ties, straps and/or hangers at intervals not to exceed 6'-0" on center and within 12" of every cabinet, box or fitting.
- I. In addition to the line and neutral conductors, all Non-Metallic Sheathed cable shall be equipped with a full size, green insulated ground conductor that runs the entire length of every branch circuit.

2.11 WIRES AND CABLES

- A. Unless otherwise specified, all wires and cables shall be thoroughly tinned 98% conductivity copper, single conductor type "THHN" moisture and heat resistant polyvinylchloride thermoplastic for use at 600 volts A.C. and D.C., rated 60 degrees C. operating temperature. Wires and cables #6 AWG and larger shall be type "THHN", unless noted otherwise. The wires and cable shall have the Underwriters' Laboratories, Inc. label and be surface printed throughout the entire length at two-foot intervals with permanent identifying markings indicating manufacturer's name, size, type, and voltage. All wire and cable shall be furnished on reels or spools and in lengths required to minimize splicing.
- B. Services entrance conductors, conductors buried below grade and/or conductors exposed to the elements shall be type "THWN" and meet the criteria mentioned above.
- C. Fixture wiring for use on 250 volts A.C. shall be type XFF, cross linked, polyfin insulated, #14 AWG, 300 volts.
- D. Feeders and Branch circuit wire in continuous raceways shall be type "THHN", heat resistant, nylon covered thermoplastic.
- E. Emergency feeders shall be NEC Type RHH/RHW and installed in conduit. These feeders shall be utilized in areas that are not sprinkled, and a one hour barrier and/or fire rated assembly does not exist.
- F. Wires of #12, and #10 AWG shall be solid, #8 AWG and larger shall be stranded.
- G. Wires and cables #2 AWG and smaller shall be of continuous solid colors follows:
 - SYSTEM VOLTAGES: 120/208 3 PH., 4 WIRE

Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Equip.Gr.	Green
 - All wires larger than #2 AWG shall be color-tape coded at all terminations.

2.12 LIGHTING FIXTURES

- A. The Contractor shall furnish and install the lighting fixtures, complete for each and every light outlet in the type quality, and size of fixture indicated on the Plans and in the Lighting Fixture Schedule. It shall be the responsibility of this Contractor to check the Plans with the Schedule for completeness. All ancillary equipment such as; madison bars, reflectors, ballasts, lamps, back boxes, etc shall be the responsibility of this contractor so that all light fixtures are complete and operable and are secured properly to the surface they are mounted to.
- B. This Contractor shall include all fixture wiring, hanging, uncrating, connecting up and making ready for operation. All fixture wire for fixtures shall not be less than #16 gauge,

- but larger if capacity of fixture requires it, and finished with asbestos-covered wires where exposed to excessive heat.
- C. This Contractor shall include the cost of furnishing and installing all lamps for all fixtures under this Contract throughout. All lamps for all fixtures shall be furnished in types as indicated. All lamps for Rapid-Start fixtures shall be General Electric or Sylvania, as called for under each fixture type.
 - D. The Contractor shall check structural and architectural details of all locations where fixtures are to be installed so that he can properly provide for installation of the fixtures.
 - E. The electrical contractor shall furnish and install an E.Z. Barrier at all the down light locations that penetrate the rated ceiling assembly. The barrier shall maintain the fire rating indicated by the architectural drawings and specifications. The barrier shall comply with UL 263, UBC 7-1, NFPA 251 and ASI A2.1. The barrier shall be certified with American Society for Testing Materials (ASTM) specifications ASTM E119-00a, "Standard Methods of Fire Tests of Building Construction and Materials".

2.13 LIGHT SWITCHES (Federal Specified Grade)

- A. All local wall switches shall be of the flush Quiet toggle type, single pole, double pole, three-way or four-way, as required and as manufactured by Pass & Seymour / Legrand.
- B. All switches shall be suitable for the control of tungsten filament lamps, fluorescent loads and shall carry the proper marking of the Underwriters' Laboratories.
- C. In all dwelling unit bathrooms, the toggle switch that controls the vanity light shall be alighted when "OFF" toggle switch. The lit toggle switch shall be Pass & Seymour / Legrand # PS20AC1- CSL.
- D. All occupancy sensors shall be Passive Infrared / Microphonic technology with settings that range from 4 second to 20 minutes. The devices shall be wall mounted or ceiling mounted as indicated on the drawings. Sensors shall be digital pulse to interface with the microprocessor in the lighting control panels. Sensors shall be capable of multi-sensor application to allow for zone control.
- E. Switches and Occupancy Sensors shall be equal to the following Pass & Seymour / Legrand devices:
 - 1. Single-pole PS20AC1-W, White
Three-way PS20AC3-W, White
 - 2. 120 Volt LED compatible Dimmer-W, White 120 Volt
Dimmer W, White Ceiling Mounted Sensor, Watt Stopper
LMUC-100-2
 - 3. Ceiling mounted Hallway Sensor, Watt Stopper LMUC-100-2 Wall
Mounted Sensor, Watt Stopper LMSW-101 for a single load
 - 4. Wall Mounted Sensor, Watt Stopper LMSW-102 for bi-level switching

2.14 RECEPTACLES (Federal Specified Grade)

- A. All convenience outlets shall be of the single or duplex (TR) type, back or side wired, T-slot and polarized slot type. All receptacles shall be of the grounded type and be rated 20-amp as indicated. Receptacles shall be manufactured by Pass & Seymour / Legrand and shall be Plug tail style.
- B. Receptacles must feature a solid brass strap with integral ground break-off ears, brass auto ground clip crimped to the strap, wrap around face locking strap and locking drive screws and

wide body design.

- C. All receptacles must be finger safe with built-in brass terminals to accept plug tail connector with solid or stranded #12 awg conductors, including the ground conductor. The connector shall have large brass contacts with an audible snapping latch to assure connection and allow release.
- D. All receptacles must be finger safe with no exposed terminals after installation and shall have circuit identification in the label on the face of each receptacle.
- E. Exposed molded parts of the receptacles must be constructed of high impact-resistant nylon or polycarbonate and must match the faceplates.
- F. In general, convenience outlet circuits shall be independent of light circuits and shall not be controlled by light circuit switches or light switches, unless specifically shown.
- G. All twenty-amp circuits indicated on the drawings shall be wired to twenty-amp devices. The use of a fifteen-amp rated receptacle on a twenty-amp circuit is not acceptable.
- H. Standard duplex receptacles specified shall be used for dual circuited receptacles by removal of break-off shunt.
- I. Exterior receptacles and/or receptacles in wet locations shall be provided with an "in-use" cover in accordance with Article 406 of the National Electrical Code. Covers shall be polycarbonate construction with a watershed channel, cord flap gasket, 1" profile and have the ability of being installed without removing a device through the use of keyed mounting holes. In-use covers shall be manufactured by Pass & Seymour/LeGrand # WIUC10-SC
- J. All receptacles installed throughout the building complex shall be as follows, or equal to:
 - 1. Duplex convenience receptacles 20A, 125V., single phase, 3 wire U-slot grounded type shall be Pass & Seymour / Legrand
 - 2. Duplex 20A, feed thru, 125V, 1-phase, 3-wire, U-slot ground fault interrupting convenience receptacle shall be Pass & Seymour / Legrand
 - 3. Dryer outlets, 30A, 250V, NEMA 10-30R, 3-wire, grounded type receptacles manufactured by Pass & Seymour / Legrand.
 - 4. Range outlets, 50A, 250V, NEMA 14-50R, 3-wire, grounded type receptacles manufactured by Pass & Seymour / Legrand.
 - 5. Exact NEMA configuration of all special purpose outlets shall be coordinated in the field with the equipment manufacturer and/or the General Contractor.

2.15 MISCELLANEOUS GENERAL-PURPOSE DEVICES

- A. All other special and general-purpose receptacles called for on the Drawings shall be of the same grade as indicated above, white phenolic compound finish and manufactured by Pass & Seymour / Legrand or equal.

2.16 DEVICE PLATES

- A. All plates used on switch and plug receptacles in finished spaces where wiring is concealed, shall be non-metallic type. Plates on exposed conduits to be sherardized. Non-metallic type shall be ivory color to match devices.
- B. Gang plates shall be used where multiple switches and/or receptacles occur at one location.
- C. Plates shall be of the same manufacturer as the wiring devices.

2.17 FLUORESCENT BALLASTS (NA)

2.18 LIGHTING CONTACTORS

- A. Lighting contactors shall be suitable for ballasted lamps and filament at 480 volts maximum.
- B. The lighting contactors shall be 12 poles and mechanically held and designed to handle the switching of tungsten or ballasted lamps as well as other non-motor loads.
- C. The contactors shall be designed to withstand the large initial inrush currents of tungsten and ballast lamp loads as well as non-motor (resistive) loads without contact welding
- D. The contactors shall be rated 30 amperes per pole.
- E. The contactors shall have an interlock that removes the power from the pickup coil and shall require application of power to release the contactor to the OFF position.
- F. The contactors shall be capable of operating such that it will not switch to OFF during power failure to the control circuit
- G. The contactor shall be installed in a NEMA 1 enclosure
- H. Mechanically held contactors shall be Eaton / Cutler-Hammer type C30CN for 30 ampere rating.
- I. 30 ampere rated contactor shall have finger safe terminals and normally open and normally closed poles shall be interchangeable where the installation of the pole on the contactor base determines if the pole is normally open or normally closed and not the pole itself. Contactor shall be field configurable from electrically held to mechanically held.

2.19 A.C. PANELBOARDS

- A. Panelboards and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of NEMA and UL as follows:
 - 1. UL 67 – Panelboards
 - 2. UL 50 – Cabinets and boxes
 - 3. NEMA PB1
 - 4. Fed. Spec. W-P-115C
 - 5. Circuit breaker – Type I class I
- B. The convertible distribution and lighting circuit breaker panelboards shall be the dead-front type and shall be in accordance with the Underwriters' Laboratories, Inc. "Standard for Panelboards", and "Standard for Cabinets and Boxes" and shall be so labeled.
 - 1. All cabinets shall be made of code gauge steel or better and if painted shall be undercoated with a rustproof bonderized surface or galvanized and treated with a non- acid agent prior to painting. Fronts, provided with doors, shall be cold-rolled sheet steel with gray finish. Directory frames shall be included on the backs of all doors. All locks shall be keyed alike. Fronts shall be furnished with approved adjustable trim clamps and means shall be provided for entrance to gutter space, lugs, etc.
 - 2. Circuit breakers shall be of the bolt-on type, stab types will not be permitted, indicating "ON-OFF" "TRIPPED" positions of the operating handle. When the breaker is tripped automatically, the handle shall assume a middle position between an overload on one pole shall automatically cause all poles to open. Two or more single pole breakers with one handle extension will not be permitted. The circuit breakers shall be quick-break on manual, as well as automatic operation and shall have inverse time characteristics secured through the use of a bi-

metallic tripping element supplemented by a magnetic trip. Circuit breaker arc quenching shall be equal to or better than the “De-Ion” arc extinguishing principle.

3. All panelboard assemblies shall be factory assembled complete with circuit breakers as shown on the Contract Plans. Interiors shall be so designed and assembled that any individual breaker can be replaced without disturbing adjacent units or without removing main bus or branch circuit connectors. All bussing shall be copper. Main buses and back pans of distribution and power panelboards shall be of such design that branch circuits may be changed without additional machining, drilling, or tapping. Where copper contact surfaces are furnished on main and branch circuit connectors, the copper shall have a 1,000 amperes/square inch density and contact surfaces of not more than 200 amperes per square inch. Silver Plated contacts which meet the same values are acceptable. Lighting and power branch circuit panelboards shall be so designed that the branch circuit connections to the main bus provide sequence (fully distributed) phasing, and such connections shall be clearly and permanently identified on the face of the front of the panel interior.
- C. A.C. Power Distribution Panels shall be convertible circuit breaker distribution Panelboards as manufactured by Cutler Hammer.
- D. Frame size for each breaker shall be as shown on the Contract Plans. All bussing shall be copper. The bare, solid, copper neutral bus shall be electrically insulated from the panel and a separate, bare copper grounding bus shall be provided in each panel. Copper ground bus shall be the equivalent of the solid neutral bus. Buses shall be clearly identified.
- E. A.C. Lighting Panels shall be circuit breaker Panelboards as manufactured by Cutler Hammer. Frame size for each breaker shall be as shown on the Contract Plans. All bussing shall be copper. The bare solid copper neutral bus shall be electrically insulated from the panel and a separate, bare copper grounding bus shall be provided in each panel. Copper grounding bus shall be the equivalent size of the solid, neutral bus. Buses shall be clearly identified.
- F. Trims for branch circuit panelboards shall be supplied with a hinged door over all circuit breaker handles. Doors in panelboard trims shall not uncover any live parts. Doors shall have a semi flush cylinder lock and catch assembly. Doors over 48 inches in height shall have auxiliary fasteners.
- G. A directory card with a clear plastic cover shall be supplied and mounted on the inside of each door. All locks shall be keyed alike.

2.20 LOAD CENTERS

- A. The Contractor shall furnish and install load centers incorporating circuit breakers of the number, rating and type as specified herein and as shown on the contract drawings.
- B. The loadcenter and all components shall be designed, manufactured, labeled and tested in accordance with the latest applicable standards of UL and NEMA including:
 1. UL 67 – Standards for Panelboards
 2. UL 50 – Standards for Cabinets and Boxes
 3. UL 489 – Standards for Molded Case Circuit Breakers
 4. UL 869 – Standards for Service Equipment
 5. Federal Specification W-C 375B – Circuit Breakers
 6. Federal Specification W-P 115b – Panel Power Distribution Type 1, Class 2.
- C. The manufacturer of the load centers shall be the manufacturer of the circuit breaker within the loadcenter. All breakers shall be full size.

- D. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
- E. Load centers shall be rated for 208 volts AC and shall have short-circuit ratings as shown on the drawings or as herein scheduled, but not less than 10,000 amperes RMS symmetrical.
- F. Breakers shall be a minimum of 100-ampere frame. Breakers 10- through 100-ampere trip size shall take up the same pole spacing.
- G. Load centers shall be labeled with a UL short-circuit rating. When series ratings are applied with integral or remote devices, a label shall be provided. Series ratings shall cover all trip ratings of installed frames. It shall state the conditions of the UL series ratings including:
 - 1. Size and type of upstream device
 - 2. Branch devices that can be used
 - 3. UL series short-circuit rating.
- H. Load centers shall be Cutler-Hammer type CH or approved equal meeting all ratings and features specified herein.
- I. All interiors, with the exception of the branch circuit breakers, shall be completely factory assembled with main breaker, main lugs or no main device as indicated.
- J. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.
- K. Physical means must be provided to prevent the installation of more over-current devices than that number for which the enclosure was designed. Full size breakers are required.
- L. Bus bars for the main and cross connectors shall be of copper construction in accordance with UL standards. Busing shall be braced throughout to conform to industry standard practice governing short-circuit stresses in load centers. All connection points shall be tin-plated copper. Bus bars shall be mounted to a rigid metal backpan.
- M. Neutral busing shall have a suitable lug for each outgoing feeder requiring a neutral connection of same ampacity as the branch conductor.
- N. All wire connectors and terminals shall be of the anti-turn solderless type and suitable for copper or aluminum wire of the sizes indicated. All connectors shall meet the "Requirements for Wire Connectors and Soldering Lugs" UL 486B.
- O. All load centers shall be suitable for use with 60/75 degrees C rated wire.
- P. Circuit breakers shall be molded case type, 3/4-inch wide per pole. Multi-pole circuit breakers shall be of a stack pole design to provide electrical phase isolation and have an internal common trip.
- Q. Each pole of a multi-pole circuit breaker shall have inverse time delay overload and instantaneous short-circuit protection by means of both thermal and magnetic sensors.
- R. The circuit breaker calibration shall not be affected by environmental changes in relative humidity. Breakers shall be calibrated after assembly.
- S. All circuit breakers shall be operated by a toggle-type handle and multi-pole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle. The handle position shall provide good visual trip indication.
- T. Contacts shall be of non-welding silver alloy.

- U. All circuit breakers shall be molded case thermal-magnetic quick-make/quick-break, over toggle type. Load centers shall be suitable for use in systems having a short-circuit capacity of 10,000 RMS amperes at the loadcenter location as indicated on the drawings.
- V. Branch breakers shall be full-size and have a range of 10 amperes through 125 amperes.
- W. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60 degree or 75 degree C wire. (Unless otherwise specified)
- X. Breakers shall be SWD rated and/or HACR rated as required.
- Y. Where indicated on drawings, supply arc fault circuit interrupters (AFCI) or arc fault circuit interrupters with ground fault circuit interruption (AFCI w/GFCI). The breaker shall provide parallel arc detection and protection in addition to overload and short-circuit protection. AFCI breakers shall be "Classified for mitigating the effects of arcing faults" or conforming to UL Standard 1699 and as defined by article 210 of the 2018 NEC.
- Z. Ground bars shall be positioned in the load center to accommodate the plug-on neutral style arc fault circuit interrupters (AFCI). AFCI's shall be provided without neutral pigtails to maximize gutter space within the load center tub.
- AA. Load centers shall have NEMA 1 general purpose enclosures as indicated on the drawings and shall be flush mounted, except where noted.
- BB. Boxes shall be made from cold rolled code gauge sheet steel having multiple knockouts, except where noted. Boxes shall be of sufficient size to provide at least a minimum code gutter space on all sides.
- CC. Boxes shall be factory assembled into a single rigid structure and be provided with circuit breaker marking labels and directories.

2.21 SAFETY SWITCHES AND FUSES

- A. Safety switches shall be of the fusible or non-fusible type as indicated on Drawings equipped with an external lever or handle for manual operation. Each unit shall be enclosed in a code-cage, sheet steel cabinet suitable for surface mounting as indicated on the drawings. Surface mounted units shall have hinged door and catches. Neutral conductors shall be solid throughout. Weatherproof switches shall be of the NEMA 3R type.
- B. Safety switches shall be heavy-duty type as manufactured by Cutler Hammer.
- C. Furnish and install a complete set of fuses for installation and deliver to the Owner one complete set of spare fuses for each installation. Fuses shall be as manufactured by Chase Shawmut, Bussman, or Littlefuse/Tracor.
- D. Electrical contractor shall furnish and install a safety switch for each Fan Coil Unit and Condensing Unit indicated on the drawings. These switches shall be located so that they are accessible for operation in accordance with the Massachusetts State Electrical Code.

2.22 GENERAL PANEL INFORMATION

- A. All panels shall be properly balanced, the circuit numbers on the Plans being a numerical indication rather than any attempt to indicate proper balance.
- B. Care shall be taken in the use of a common neutral to make certain that no more than one leg is taken from each phase.
- C. Typed indexes shall be provided in each panel indicating circuit number and the outlets or items

controlled or fed from same.

2.23 MODULAR METERING EQUIPMENT

- A. Furnish and install the service entrance rated modular metering equipment as herein specified and shown on the associated electrical Drawings. The modular metering shall meet all the requirements set forth by Underwriters' Laboratories and shall be listed and labeled.
- B. Modular metering shall consist of a tap box and/or a main switch for the service. The rating shall be as indicated on the drawings. The tap box or the main switch shall be bolted to a NEMA 3R, single- phase modular meter sections with built-in tenant circuit breakers. Number of meters and circuit breakers shall be as indicated on the drawings. Modular metering equipment shall be manufactured by Cutler Hammer or approved equal.
- C. House panel meters shall be equipped with a circuit breaker (rating as indicated on the drawings) and lever by-pass kit on the respective meters in accordance with the local Utility Company requirements.
- D. All metering equipment shall be provided with copper bussing and bolted connections to provide one continuous structure.

2.24 MAIN DISTRIBUTION EQUIPMENT

- A. Furnish and install the service entrance switchboards as herein specified and shown on the associated electrical drawings. The switchboards shall meet all the requirements set forth by Underwriters' Laboratories and shall be listed and labeled.
- B. Each switchboard framework shall be fabricated on a die-formed base or base assembly consisting of formed steel and commercial channel welded or bolted together to rigidly support the entire shipping unit for moving on rollers for mounting. The framework is to be formed code gauge steel, rigidly welded and bolted together to support all cover plates, bussing, and component devices during shipment installation. Each switchboard section shall have an open bottom and individual removable top plate for installation and termination of conduit. Top and bottom conduit area is to be clearly shown and dimensioned on the Shop Drawings. The wireway front covers are to be hinged to permit access to the branch breaker load side terminals without removing the covers. All closure plates shall be screw removable and small enough for easy handling by one man. The paint finish shall be gray enamel over a rust-inhibiting phosphate primer.
- C. The switchboard bussing shall be plated copper and of sufficient cross-sectional area to continuously conduct rated full load current with a maximum average temperature rise of 65 degrees C. above an ambient temperature of 40 degrees C. The bus bars shall be rigidly braced to comply with the integrated equipment rating of the switchboard. The horizontal bus bars between sections shall be located on the back of the switchboard to permit a maximum of available conduit area. The end section is to have bus bar provisions for future addition of a switchboard section. The provisions shall include the bus bars installed to the extreme side of the switchboard and prepunched to facilitate future bolted splice plates. The horizontal main bus bar supports, connections, and joints are to be bolted with grade 5 carriage bolts and Belleville washers to be free of required periodic maintenance. The switchboard shall be bus sized and metered as shown on the Drawings.
- D. Each switchboard, as a complete unit, shall be given a single-integrated equipment rating to meet the available fault current as coordinated with the local utility company or a minimum of 65,000 amperes symmetrical fault current or larger as recommended by the manufacturer. The switchboard manufacturer shall certify that all equipment is capable of withstanding the stresses

- of a fault equal to that of the fault current mentioned above at lowest rated overcurrent protective device contained therein. Certification shall be established by factory tests done by the manufacturer on similar equipment. This test data shall be available and shall be furnished to the Engineer, if requested, with or before the submittal of approval Drawings.
- E. Distribution circuit breakers shall be 80 percent rated, group mounted with individually insulated, braced and protected connectors. The front faces of all circuit breakers shall be flush with each other. Each breaker shall have a circuit cardholder and neatly printed card identifying the circuit. Tripped indication shall be clearly shown by the breaker handle taking a position between ON and OFF. The entire switchboard shall be manufactured by Eaton/Cutler Hammer or General Electric.
 - F. The electrical contractor shall be responsible for a complete coordination study to properly set all adjustable settings on circuit breakers. A copy of the coordination study shall be submitted to the engineer and the owner as part of the as-built drawings.

2.25 MOTOR WIRING

- A. The Contractor shall do all wiring required for plumbing, ventilating and heating motors including mounting of switches and starters, as well as wiring of same. All wiring for the control of motors unless indicated on Electrical Plan, shall be provided under HVAC, Plumbing and Fire Protection.
- B. The Contractor shall furnish and install horsepower rated disconnecting means as required by the National Electrical Code for all motors. Motor-driven equipment specified under "Plumbing" and "Heating and Ventilating" may be factory wired complete with controller and motor disconnects; the Contractor shall coordinate equipment purchased under these divisions so as to provide any necessary equipment. Motor disconnects shall be unfused unless noted otherwise. Single-phase motor disconnects may be a thermal switch.
- C. Each disconnect shall be clearly labeled with a screw fastened ¼" engraved nameplate stating load controlled.

2.26 MOTOR STARTERS AND CONTROLS

- A. Motors will be furnished and installed under the respective Sections of the Specifications under which the equipment is specified.
- B. Motors ½ hp and larger will be 3 phase, 60 Hertz; motors less than ½ hp will be 120 volts, single, 60 Hertz, except specifically noted equipment.
- C. All motor starters and controls unless furnished as an integral part of the equipment, shall be provided with suitable metal enclosures and shall conform to the NEMA Industrial Control Standards.
- D. All motor starters shall have individual running overcurrent protection in each phase and shall be provided with two sets of auxiliary contacts. Starters for single-phase motors shall be 2 pole and for 3 phase motors shall be 3 pole.
- E. Manual starters shall be of the toggle mechanism type for full voltage starting. Magnetic starters shall be across-the-line type, minimum size NEMA 1 equipped with Hand-Off-Automatic switch.
- F. Each motor starter and each control station shall be clearly labeled with screw fastened ¼" engraved nameplate stating equipment controlled.

2.27 SECONDARY ELECTRICAL SERVICE

- A. Secondary electrical service shall commence at a secondary connection of the utility company mounted transformer.
- B. Electrical Contractor shall furnish and install conduit, wire and compression connectors from the secondary connections at transformer to main breaker in the building. Sizes of which shall be indicated on the Drawings.
- C. Electrical Contractor shall furnish and install all panels, switches and any other equipment shown on the Drawings or herein indicated to assure a complete working system.
- D. Electrical Contractor shall furnish and install a concrete envelope around the secondary conduits as indicated on the drawings. The duct bank assembly shall be buried a minimum of 36 inches below the finished grade and each duct bank section shall have a yellow warning tape run the entire length of each duct bank. Backfill in trenches shall be select with no stone or rock larger than a ½" in diameter.

2.28 NAMEPLATES

- A. Nameplates shall be furnished and installed on all panelboards, pull boxes, cabinets, for all special purpose switches, motor disconnect switches, remote control stations, motor starters and other controls furnished under this Contract, to designate the equipment controlled and function.
- B. Nameplates shall be laminated black bakelite with ¼ inch high white recessed letters.
- C. Nameplates shall be securely attached to the equipment with galvanized screws or rivets.

2.29 SUPPLEMENTARY STEEL, CHANNEL, AND SUPPORTS

- A. The Electrical Contractor shall furnish and install all supplementary steel, channels, and supports required for the proper installation, mounting and support of all lighting fixtures and electrical equipment, to be installed under this Contract, as required.
- B. All supplementary steel, channels, and supports shall be furnished, installed, and secured with all fittings, support rods, and appurtenances required for a complete support mounting system.
- C. The type and size of the supporting channels and supplementary steel shall be determined by the Electrical Contractor and shall be of sufficient strength and size to allow only a minimum deflection in conformance with requirement for loading.
- D. All supplementary steel and channels shall be installed in the neat and workmanship manner parallel to the walls, floor, and ceiling construction. All turns shall be made with 90 degree and 45 degree fittings, as required to suit the construction and installation conditions.

2.30 TELEPHONE UNDERGROUND CONDUIT SYSTEM

- A. Furnish and install all conduits from the nearest telephone company handhole/manhole/pedestal point of connection to the main backboard indicated in the building as indicated on the Drawings. Excavation and backfilling shall be furnished under another section of this Specification.
- B. Lay conduits in trenches in true alignment and sloped for drainage. All conduits shall slope away from the building. Slope shall be continuous minimum of 3" in 100' unless otherwise noted.
- C. All conduits shall be encased in concrete.
- D. Materials: Schedule 40 PVC conduit as manufactured by Carlon, in 10' lengths, including all couplings and appurtenances necessary for laying in complete conduit line.

2.31 VOICE/DATA SYSTEM

- A. Backboards for voice/data equipment shall be furnished and installed by this Subcontractor. Main backboard shall be as dimensioned on the Plans. All backboards shall be painted black on both sides with fire resistant paint.
- B. The electrical subcontractor shall be responsible for extending the voice/data services to each dwelling unit as indicated on the plans.
- C. The electrical subcontractor shall furnish and install all equipment to the Main Backboard. The Electrical Contractor shall furnish all conduit and sleeves where required. The Electrical Contractor shall furnish and install all voice / data outlets and all wiring indicated below.
- D. All backboards shall be furnished with a ground bar with insulated stand-off secured to the backboard. A #6 bare copper ground conductor shall be bolted to the ground bar with a two-hole high compression connector on one end of the cable and the other end of the cable shall be connected to a piece of bare building steel with an approved connector. The ground bar shall be capable of handling at least 12 subordinate connections.
- E. The electrical subcontractor shall be responsible for extending the voice/data services to the dwelling unit interface panels as indicated on the plans.
- F. Voice/data system wiring and devices shall be as follows:
 1. Each dwelling unit shall be equipped with a network interface panel with a built-in receptacle as described on the drawings.
 2. Each dwelling unit will be equipped with a telephone outlet in each bedroom, each living room and in each kitchen.
 3. The electrical contractor shall pre-wire the building for telephones as indicated on the drawings. Inside each dwelling unit the wiring shall homerun from each outlet, back to a dwelling unit interface panel and be terminated. Each outlet will be a single RJ45 female jack mounted to an outlet box and wired with a minimum of (1) one, Category 6, 8/C #24 plenum rated cable.
 4. The electrical contractor shall provide one (1) microduct from the main backboard to each dwelling unit interface panel. Each dwelling unit interface panel will be equipped with a duplex receptacle wired to the nearest room receptacle, 110 punch down blocks and/or RJ45 patch panels.
 5. The electrical contractor shall coordinate with the telephone service provider for the installation of the copper back bone to the building.
 6. The main back board in the building shall be equipped with a powered quadplex power outlet and a #6 bare copper ground.
 7. Each dwelling unit shall be fed with at least (2) two, Category 6, 8/C #24 plenum rated cables for telephone service from the service provider.
 8. All voice conductors shall be white in color and consist of plenum rated, 8/C #24 awg Category 6 solid annealed copper, individually insulated with high density PVC, and tough PVC outer jacket, to each outlet. Cables shall be terminated to a RJ-45 jacks at the outlet locations indicated on the drawings.
 9. Cables shall be UL CM rated, meet U.L. 444 and NEC article 800 requirements.
 10. All cables and their installation methods shall comply with Article 800 of the National Electric Code. All cables shall be supported by means of "J" hooks, "D" rings, cable management trays, or a unistrut support hung from the building structure. Cables shall not be fastened in any way to conduit, piping, duct work or any other trade component.

11. All jacks, patch panels, 110 punch blocks, etc shall be manufactured by Ortronics.
12. All voice/data cables and patch cords shall be manufactured by Berk-Tek.
13. All cables shall be certified, and copies of the test reports shall be turned over to the owner in a three ring binder.

2.32 ADDRESSABLE FIRE ALARM COMMAND CENTER SYSTEM

A. General Requirements:

1. Comply with Division 1, General Requirements and documents referred to therein.
2. Provide all labor, equipment, and materials to complete the Life Safety Fire Alarm System work in accordance with local and State Regulations.
3. Fire alarm system and components shall be listed to U.L. standard 864, Current Edition and Manufactured by Notifier Company or FCI.

B. Description of System:

1. The Life Safety Fire Alarm Systems shall be an addressable, non-coded, electronically supervised, microprocessor-based system. It shall be complete with all necessary hardware, software and memory specifically tailored for this installation. It shall be possible to permanently modify the software on site by using an integral service console or with a personal computer and specific system software.
2. Provide smoke, carbon monoxide, fire detection, sprinkler supervision, and automated single stage evacuation control. Interface to environmental controls and auxiliary devices.
3. Provide signal appliances and signal controls for the safe and orderly evacuation of the building.
4. The Life Safety Systems shall generally consist of the following main components:
 - a. control panel with 60/10 batteries
 - b. supervisory relays for sprinkler devices, etc.
 - c. auxiliary devices for door holder, etc.
 - d. audio visual devices
 - e. LCD type annunciator
 - f. framed graphic plan
 - g. exterior beacon
 - h. exterior sprinkler bell
 - i. bi-directional antenna system
 - j. 16 zone radio frequency masterbox
 - k. Locate the main components and all related devices as shown on the Plans.

C. Automatic Alarm Operations:

1. Operation of an addressable alarm input device shall flash the alarm signal, and annunciate on the alphanumeric LCD 80-character display. Display the type, condition, and a location message for the first alarm immediately without the need for operator response. Capture the display to annunciate an alarm. In the event the shared display is annunciating when events of a lower priority or the FACP is in the site-programming mode. Turn on a red alarm LED at the control panel.
2. Sort new (subsequent) events by type and log into queues for display by emergency user selection. Sound a momentary audible signal for each event occurrence. Flash a queue LED when an unseen event exists in a queue. Update the display to annunciate the total by type and the chronological number of the event on display i.e. 3 alarm reports - #2

displayed.

3. Activate the radio frequency masterbox to transmit the alarm signal to the fire department.
 4. Sound the evacuation signals throughout the building.
 5. Should a fire official choose to operate the Signal Silence button to silence the audio portion of the system, the control panel shall turn on an alarm silenced LED while the signals are in the silence mode. Should a new alarm occur after signal silence, all the alarm devices shall re-sound.
 6. Air Handling Unit smoke detectors when activated shall shutdown the respective unit and all associated smoke and fire dampers. The exact location of all remote test stations shall be coordinated with the local fire department.
 7. Upon activation of elevator lobby smoke detectors, elevator machine room smoke detectors and/or elevator shaft smoke detectors the respective elevator shall home to the main level. Once the elevators have reached the main level the elevator doors shall open and remain open until the system has been reset. If the main level is in alarm, home the elevators to an alternate floor designated by the local fire department.
 8. Upon activation of a system connected carbon monoxide detectors, a supervisory signal shall be sent to a UL Approved central station monitoring company via the digital communicator specified herein. This signal transmission shall be in accordance with NFPA 720, "Standard for Installation of Carbon Monoxide Warning Equipment in Dwelling Units 2005 Edition" and the 8th edition of the Massachusetts State Building Code.
 9. De-energize door holders to release all fire doors.
 10. Elevator machine room and elevator hoist way smoke detectors when activated shall start the hoist way exhaust fan and open the hoist-way louver to ventilate the shaft. And shunt trip the elevator power.
 11. The contractor shall provide a time delay on the main flow switch to allow time for a subsequent flow switch to alarm first and annunciated at the FACP. This shall be coordinated with the local fire department.
- D. Non-emergency User Operations:
1. Fire Alarm Control Panel (FACP) shall be equipped with full QWERTY keypad, Acknowledge/Signal, Silence/System, Reset/Drill switches, Automatic time control functions with holiday exceptions and Boolean logic equations.
 2. Log a trouble and turn on a System Trouble LED for all user features, which modify, bypass, or inhibit the normal operations of the fire alarm life safety system. Suppress the common trouble signal during delivery of alarm signaling.
 3. On the LCD, CPU, operation of the display ID code key shall annunciate the point identification address and description of the currently displayed device.
 4. Operation of the menu key shall call a smart prompt program to guide the user through LCD, CPU programming operations. Restrict the use of this program by password.
 5. Operation of the Reset/Drill Switch shall return the system to normal after all initiating devices have been returned to normal.
- E. Supervisory Operations:
1. Operation of an addressable supervisory input device shall flash the supervisory queue indicator, sound a momentary audible signal, and display on the alphanumeric shared display.
 2. Display the type, condition, and a location message for the first alarm immediately

- without the need for operator response if no fire alarms are present.
3. Log subsequent supervisory events in the supervisory queue for display by emergency user selection. Also, display the current total number of supervisory events and the chronological number of each event.
 4. Provide supervisory alarm priority to capture the display from a trouble or monitor event.
 5. Turn on a respective amber group individual zone LED at the control panel and activate the digital communicator.
- F. Quality Assurance:
1. Install in accordance with the NFPA and the National Electrical Code.
- G. Submittals:
1. Submit Shop Drawings for the control panel and all devices.
 2. Submit custom operational sequences for the emergency communications, peripheral devices and fire alarm controls.
 3. Submit pictorials or photographs of control equipment overviews, modular components, and interconnecting cable charts.
 4. Provide system manuals, maintenance instructions and the name, address, and 24-hour telephone number of the service department of the SYSTEM SUPPLIER.
 5. The Electrical Contractor shall provide as-built floor plans showing all devices, control panel, and connections to mechanical equipment. Drawings shall show all conduit routing and sizes, all wire sizes, types, and numbers.
- H. Replacement of Defective Items:
1. Supply to the Architect a written agreement from the equipment manufacturer to supply new components to replace defective items without cost to the Contractor, where such defective items become evident during a period of one year from the approved certificate of completing.
- I. Control Panel:
1. Provide fire alarm control panel in accordance with U.L. and N.F.P.A. requirements. Control panel shall be Notifier.
 2. The system shall be housed in a surface wall mounted cabinet with a door and viewing windows as required. All annunciator indications, operating controls and instructions shall be clearly visible through the viewing window. The door shall be complete with a lock and two keys.
 3. All electrical connections shall be front accessible through the hinged inner door.
 4. The service console shall provide system activity LED's and event buffer display.
 5. The single person installation verification test shall allow silent and non-silent testing of all system components. In addition, it shall produce a detailed report listing relay and signal programming for each verified input.
 6. Provide the ability to field program on the panel or with the use of a personal computer equipped with system specific software. The software shall allow a qualified service technician to perform multiple level programming, detailed system diagnostics and print system summary reports. The FACP shall have an 80 column printer interface and two(2) USB ports.
 7. Control panel shall be provided with a Radio Frequency shield to prevent interference and/or failure when firefighting personal key two-way radios when in close proximity to the FACP.
- J. 16 Zone Radio Frequency Alarm Transceiver

1. The wireless, two-way radio transceiver shall provide two-way alarm transmission from each building to the fire department receiver. The transceiver shall be 16 zones and manufactured by Signal Communications #DTXH3R2-N1R16 and shall be UL and FM listed for primary signaling.
 2. Each transceiver shall be equipped with battery back-up built into the unit, omni-directional 7db antenna, 4.0 watt UHF and VHF transceiver, A controller that will repeat alarms, repeat trouble, low battery, AC status, battery charger and will operate in the range of -40 to 150 degree F.
 3. Each zone shall have a display light for both Trouble and Alarm
 4. Each unit shall (4) command / control Form C relays. These relays shall be rated 2A @30 Volts DC , 0.4A @125 volts AC and be capable of being programmed.
 5. Each unit shall comply with UL 9th Edition, UL 1610 Central Station Alarm Units, UL864 Control Unit Accessories and be Factory Mutual approved.
 6. Each unit shall have a frequency range of 162-174 MHz, primary power of 120 volts, DC power of 24 volts, 12 volts, 7-amp hour battery and a minimum of 72 hours of battery back-up capability with a fully configured system.
 7. Exact identification of zones shall be coordinated with the fire department.
- K. Signaling Line Circuits
1. The FACP shall be provided with two (2) Signaling Line Circuits (SLC), style 4, 6 or 7. Each SLC shall be capable of monitoring 159 detectors (any combination of; ionization, photoelectric, thermal or multi-sensor devices) and 159 addressable modules (pull stations, normally open contact devices, two-wire smoke detectors, notification appliances, or relays) per SLC. 318 devices per loop, 636 devices per FACP.
 2. Connect SLC's to a Loop Controller. Use solid, twisted pair, type FPLP wire in a metallic sheath with a red stripe. Connect SLC's, Class A style. Class B wiring shall not be acceptable.
 3. Each SLC shall have a ground fault LED in the FACP to monitor the circuits for ground faults.
 4. Each addressable device shall have a unique address. The manufacturer shall program each address and correlate them to output operations per the Plans and this Specification. Non-functioning, non-addressed and non-programmed devices shall report trouble. FACP shall provide for site modification to the addressable programming. The system shall provide for removal of devices without the necessity of re-addressing any other devices. Provide installation flexibility to the contractor by ensuring that the physical sequence (placement) of the devices on the loop need not determine the device address.
 5. Address and connect, addressable alarm receiving devices to the addressable loop as recommended by the manufacturer. Devices on each SLC shall be polled in less than two seconds and activate in less than five seconds. The manufacturer shall provide installation tables to identify all device addresses.
 6. Connect each normally open sprinkler supervisory device to a dedicated addressable transponder. Annunciate each supervisory addressable input device alarm or trouble operations on the LCD. Provide an individual status description on the LCD for each supervisory device.
 7. Connect each normally open Carbon Monoxide detector to a dedicated addressable transponder. Annunciate each supervisory addressable input device alarm or trouble operations on the LCD. Provide an individual status description on the LCD for each supervisory device.
 8. Provide circuits to monitor auxiliary devices such as smoke dampers and fan operation as

shown on the Plans. Annunciate open or shorts as required. Provide an individual status description on the LCD for each circuit and display a message on the LCD.

- L. Notification Appliance Circuits (NAC):
1. All NAC's shall be power limited, supervised circuits, field programmable for any of the following operations:
 - a. Audible or Visual signals controlled by signal silence.
 - b. Audible or Visual signals controlled by system reset.
 - c. Remote auxiliary devices, which DO or DO NOT operate in the degraded mode. This shall be determined upon field requirements and be selectable during programming.
 2. The FACP shall be equipped with a six (6) amp switch mode power supply with four Class A or B, built-in NAC circuits. All audio/visual devices shall be synchronized and field selectable as specified herein.
 3. The system manufacturer shall provide, as necessary, auxiliary power supplies. The auxiliary power supplies shall provide power limited, supervised circuits for audio/visual devices. All auxiliary power supplies shall have built-in batteries and a charging circuit. Auxiliary power supplies shall be powered from a 120-volt dedicated power source. Exact quantity of auxiliary power supplies shall be coordinated with system manufacturer.
- M. Auxiliary Relays:
1. Auxiliary relay module shall be provided with four, type "1C" site programmable relays.
 2. Provide auxiliary relays with switches and status descriptions on the LCD for control functions as listed in the operations and as shown on the Plans. Relays shall be dust tight with fuse protected contacts rated at 24 VDC/120 VAC, 2.5amps. Inductive at a 35 power factor. Each relay will have a follower LED which verifies operation of the relay.
- N. Central Station Connection:
1. FACP shall be provided with an eight channel, 636 point dual line digital communicator with built-in battery back-up. The contractor shall provide two dedicated telephones to an EIA-485 terminal block built into the FACP.
 2. Communicator shall be UL listed and comply with NFPA 72 A, B, C, standards.
 3. Program the communicator to operate upon activation of any supervisory condition and contact a UL Approved central station monitoring company. Re-transmission shall be in accordance with the 7th edition Massachusetts State Building Code and a witness test shall be provided before the system is approved.
- O. Fire Alarm Common Controls and CPU:
1. Common control/CPU shall be self-configurable and able to map to the display module by I/O module type. It shall have built-in field programmable software capable of being programmed and configured on site using either the built-in service console or a personal computer with system specific software. The computer shall be capable of connecting to the USB ports.
 2. Provide a LCD CPU/Common Control Central Processing Unit with a 2 line 80-character LCD display and switches for common control, programming functions and alarm displays.
 3. Universal Display modules shall connect to the CPU and provide all point identification and/or control functions.
 4. Provide the following indicators: Power ON LED, Signals Silenced LED, Point Disabled LED, System Trouble LED, Supervisory LED, Security LED, Pre-Alarm LED, Fire Alarm LED,

NAC #1 LED's, NAC #2 LED's, NAC #3 LED's, NAC#4 LED's, SLC #1 Ground Fault LED, SLC #2 Ground Fault LED and Earth Fault LED.

5. Provide the following keypad switch controls; Ground fault detection Enable/Disable, Disable/Enable switch for back-up alarms for (4) NAC's, Acknowledge/Scroll Display switch, Signal Silence switch, Drill switch, Reset switch and Lamp Test switch.
 6. The Liquid Crystal Display (LCD) shall be of the super twist high contrast characters. Provide non-interleaving event display by type sorting input events into queues. Types shall be fire alarm, supervisory alarm, trouble, and monitor. Provide a full alpha numeric 80 character (2 x40) display to support site programming. Initiate a trouble signal if programming input is incomplete.
- P. System Supervision:
1. Hardware or software fault detection shall activate the audible and visual trouble indicators. Operation of the silence push shall silence the audible signal, but the LED shall remain on. A new fault shall resound the signal. It shall not be possible to turn off the trouble LED until the system is clear of all faults. The common trouble circuit operation shall be independent of the CPU.
- Q. Trouble Reporting:
1. All by-pass conditions such as auxiliary or fire department by-pass.
 2. All wiring to all fire alarm devices.
 3. Power connections and data transmissions.
 4. All control panel hardware for placement.
 5. All software routines and all program data for change.
 6. All volatile memory for failure.
 7. Primary and secondary power.
 8. All field wiring for ground faults.
 9. Maintain a record in memory of fault events.
 10. Identify faults by code to simplify service trouble shooting. Standard system reset shall not erase this record.
- R. System Power:
1. Provide primary operating power of 120 Volts A.C. 60 Hz. Use modular no break system power supplies with integral battery chargers capable of recharging within 12 hours.
 2. Provide supervised secondary battery power to operate the entire system for 60 hours under normal conditions. At the end of 60 hours, the standby source shall power the system under alarm conditions for 10 minutes.
- S. System Protection:
1. Provide high voltage transient protection all circuits. Minimum protection shall be 1000V for alarm receiving, 1500V for signaling, and 2500V for power supplies.
 2. Protect sensitive electronics subject to static damage. Installer access to areas with static sensitive parts shall not be necessary.
 3. Protect controls and annunciation behind locked doors all keyed alike. Provide door windows to allow viewing of all common controls and system annunciation.
- T. Addressable Devices:
1. Provide input devices such as manual stations, smoke detectors, duct smoke detectors

- carbon monoxide detectors and heat detectors with built-in addressable transponders. Set a unique address at each device.
2. For heat detectors with fixed temperature ratings higher than 135 F, provide separately mounted transponders outside of, or away from the high heat areas.
 3. Provide separately mounted transponders for other input devices such as:
 - I. sprinkler flow
 - II. sprinkler supervisory
 - III. low pressure switches
- U. Flow and Tamper Switches:
1. Flow and Tamper Switches shall be furnished and installed under division 15, wire by the Electrical Contractor. Provide Monitor module for each of these devices for addressability to FACP.
 2. Tamper switches shall be wired such that upon activation, a supervisory signal is sent by the control panel to a U.L. approved central station monitoring company via a built-in dual line digital communicator.
- V. Addressable Pull Stations:
1. Manual Fire Alarm Stations shall be non-coded, dual action type pull station. The pull stations shall be capable of being opened without causing an alarm condition. An operated device is when the handle latches in the down position and the word "ACTIVATED" appears. This is the indication that the station has been operated. Each station shall be equipped with a built-in bicolor LED, which shall be visible through the handle of the station. The LED shall flash during normal operation and shall latch steady, RED when in alarm. Manual stations shall be constructed of molded durable Lexan with a textured finish. Stations shall be suitable for surface mounting on matching back box, or semi-flush mounting a standard single gang box and shall be installed not less than four and one-half feet above the finished floor. Manual stations shall be Underwriters Laboratories Listed. Provide an addressable monitor Modules with each station. Manual station shall comply with ADAAG guidelines for controls and operating mechanisms (Section 4.1.3, 13) and meet ADA requirements for 5 pounds maximum activation force. Each device shall be equipped with a Category 30 key operated reset.
- W. Addressable Photoelectric Smoke Detectors:
1. The Contractor shall install, where indicated on the Plans, plug-in, two-wire intelligent Addressable Photoelectric low frequency sounder type smoke detectors and matching bases. The detectors shall be the self-verification type and have integral analog communications, built-in type identifications, and two blinking LEDs. The LEDs shall blink each time the device is addressed and shall be continuously illuminated when the detector is in alarm. The addressing switches shall be located in the detector bases which shall be directly connected to an SLC for two-way communication with the FACP. The bases shall accommodate matching ionization and thermal detectors. The bases shall be capable of mounting to outlet or device boxes and have provisions for surface mounting. The detectors shall have a built in test switch and shall be capable of remote testing from the FACP. Devices with addressable switches or settings in the heads shall not be accepted.
- X. Addressable Heat Detectors:
1. The Contractor shall install, where indicated on the Plans, plug-in, two-wire intelligent Analog/Addressable fixed temperature heat detectors and matching bases. The detectors shall be continuously monitored to measure any change in their sensitivity due to temperature and

have integral analog communications, built-in type identifications, and two blinking LEDs. The LEDs shall blink each time the device is addressed and shall be continuously illuminated when the detector is in alarm. The addressing switches shall be located in the detector bases which shall be directly connected to an SLC for two-way communication with the FACP. The bases shall accommodate matching smoke detectors. The bases shall be capable of mounting to outlet or device boxes and have provisions for surface mounting. The detectors shall have a built-in test switch and shall be capable of remote testing from the FACP. Devices with addressable switches or settings in the heads shall not be accepted.

Y. Addressable Carbon Monoxide Detectors:

1. The Contractor shall install, where indicated on the Plans, plug-in, two-wire intelligent Carbon Monoxide detectors and matching bases. The detectors shall be continuously monitored and fully listed to UL Standard 2075. Each detector shall be equipped with a trouble relay, which sends a sensor failure or end-of-life signal to the control panel and the central station via the digital communicator.
2. If a detector senses carbon monoxide it shall alert by sounding and flashing a temporal -4 signal pattern. Each carbon monoxide detectors shall be addressed and shall be provided with dual color LED (green for normal/standby and red for alarm) indication, which blinks 1 per minute, to indicate normal standby, alarm, or end-of-life. When the sensor supervision is in a trouble condition, the detector shall send a trouble signal to the FACP. When the detector gives a trouble or end-of-life signal, the detector should be replaced.
3. Each detector shall be provided with a mini monitor module shall fit in a standard single gang box located above the detector it is monitoring. The addressing dials shall be located as part of the mini monitor module which shall be directly connected to an SLC for two-way communication with the FACP. The detectors base shall be capable of mounting to a standard single gang outlet or device boxes and have provisions for surface mounting. The detectors shall have a built-in test switch and shall be capable of remote testing from the FACP.
4. Each carbon monoxide detector shall be in full compliance with UL 2075, be equipped with a trouble relay, electromechanical sensing technology and supervised wiring shall be accomplished with Phillips head SEMS screw terminal connections.
5. Carbon monoxide detectors shall be manufactured by Notifier (#NMMCO).

Z. Signal Appliances:

1. Strobe Units
 - i. Use red wedge-shaped strobes clearly labeled "FIRE" in white letters. Polarize the strobes for supervised operation. Strobes shall provide a high intensity flashing light for visual signaling. Strobe units shall mount surface or flush as indicated on the plans and mount to a standard 4" x 2 1/8" back box with no extension ring required. Strobe Units shall be synchronized and comply with ADA and be UL approved. All strobe units shall be field selectable on the front of the unit with Multi-Candela settings of 15/30/75/110 candela.
 - ii. All strobe units installed in Hearing Impaired dwelling units shall 177 candelas.
2. Signal Horn/Strobes
 - i. Provide red units with white letters clearly labeled "FIRE". Each device shall produce a minimum of 75 Candela with a Xenon Strobe Light and an audible signal that will produce not less than 87 dba sound output. Horn/Strobe devices shall be synchronized and comply with ADA and be UL approved. Mount devices flush or surface as indicated on the plans and mount to a standard 4" x 2 1/8" back box with no extension ring. All

horn/strobe units shall be field selectable on the front of the unit with Multi-Candela settings of 15/30/75/110 candela and have at least two (2) selectable horn tones and three (3) decibel settings.

3. Mini Horns

- i. Provide units with an audible signal that will have not less than 87 dba sound output at 24 volts DC. Mount flush or surface as indicated above. Mount devices flush or surface as indicated on the plans and mount to a standard 4" x 2 1/8" back box with no extension ring. All horn units shall have at least two (2) selectable horn tones and three (3) decibel settings.

AA. Auxiliary Devices:

1. Provide remote control relays connected to supervised auxiliary circuits for control of fans, dampers, door releases, etc. Relay contact rating shall be 5 amperes at 120 VAC resistive or 2.5 amperes at 120 VAC inductive for a .5 power factor.
2. Provide flush wall mounted electromagnetic door holders. Holders shall mount to a standard single gang outlet box. Holders shall be rated 24V DC and shall release upon activation of the fire alarm system.
3. Beacon, provide a 24 VDC exterior Weatherproof Beacon constructed with a Lexan lens a heavy duty xenon strobe lamp. Beacon shall be similar to Amsec SL-5 or equal.

BB. Installation:

1. Install manual pull stations as indicated and connect to an SLC. Mounting heights shall be as indicated on the drawings. Install automatic alarm and initiating devices as indicated and connect to SLC's. Mounting heights and locations shall be as indicated on the drawings and coordinated with the local Fire Marshall.
2. Install duct detectors and Remote Test Stations in HVAC equipment as indicated on the drawings. Mount duct smoke detectors at a suitable location in the supply air duct work of units 2000 cfm or greater. In units that are rated 15,000 cfm or greater, duct smoke detectors and remote test stations shall be installed in both the supply and return air streams of the unit.
3. Mounted duct detectors in a readily accessible location for maintenance.
4. Install audible signal devices as indicated and connect to NAC's. NAC wiring shall be suitable for Class II.
5. Connect door holders to the fire alarm system such that the designated doors release upon activation of the fire alarm system.
6. All fire alarm wiring shall be plenum rated Power Limited Fire Alarm cable with solid conductors. The contractor shall be responsible for the supply and installation of the cable, wire, wire pulling, junction boxes, electrical boxes, and terminal cabinets in accordance with the manufacturer's recommendations but shall be no smaller than what is indicated on the drawings. The manufacturer shall allow for the necessary amount of onsite assistance for the contractor during the construction period.

CC. Verification and Certification:

1. The manufacturer shall make an inspection of the Life Safety equipment. The inspection shall include all equipment necessary for the direct operation of the system such as input and output devices. Verify wiring connections to ensure that all equipment meets applicable codes and standards. Verify equipment supplied by the manufacturer has been installed per the manufacturer's recommendations. Verify the operation of all devices. Verify the wiring to all supervised devices is supervised.

PART 3.00 – EXECUTION**3.1 GENERAL PROVISIONS**

- A. All locations of equipment and materials are subject to review by the Architect in order to coordinate with field conditions.

3.2 TESTS

- A. The right is reserved to conduct acceptance tests of all equipment wiring or any other work furnished under these Drawings and/or Specifications to determine the fulfillment of specific requirements and/or design.
- B. The Electrical Contractor shall conduct all such tests in the presence of authorized representative of the Owner and at such times that the Owner may designate.
- C. The Contractor shall perform all tests, supply all instrumentation, personnel and make all adjustments of equipment and wiring as may be necessary. Insulation resistance readings of all equipment and circuits shall be taken by the Contractor in the presence of the Owner's representative. Megger readings of less resistance than the recommended minimum as called by Section 110-7 of the NEC shall be required or replaced by this Contractor at no cost to the Owner.

3.3 GROUNDING

- A. The Contractor shall furnish and install all material required for grounding and/or bonding in the building of all equipment, power systems, all as shown on the Drawings and/or specified, as a minimum.
- B. Grounding shall conform to NEC Article 250.

3.4 INSTALLATION OF WIRING AND CONDUIT

- A. In general, all wiring is to be run concealed unless otherwise indicated to be run exposed. Exposed wiring in the mechanical spaces is acceptable.
- B. Raceways shall be continuous from outlet to outlet and from outlets to cabinets, junction and pull boxes, and shall enter and be secured to all boxes in such manner that each system shall be electrically continuous from service to all outlets. Terminal of all conduits shall be furnished with double locknuts and bushings.
- C. Exposed conduits shall be run parallel to or at right angles to the wall of the buildings, and all bends shall be made with standard ells or bent to not less than the same radius. Horizontal runs of exposed conduits shall be close to ceilings, passing over water or other piping where possible and shall be supported by pipe straps or by other approved means, not more than five feet apart.
- D. In no place shall conduit be run within six inches of hot water pipes or appliances, except where crossing is unavoidable, and in that case the conduit shall be kept at least one inch from covering of pipe crossed.
- E. Conduits shall be supported on approved types of galvanized wall brackets, ceiling trapeze, strap hangers or pipe straps, secured by means of toggle bolts on hollow masonry, machine screws on metal surfaces or wood screws on wood construction. No nails shall be used as a means of fastening boxes or conduit.
- F. In general, no splices or joints will be permitted in feeder cables, and branches shall be spliced at outlets or accessible junction boxes.

- G. All splices in wire #6 AWG and smaller shall be standard pig-tail made mechanically tight, then cleaned, and insulated with proper layers and thickness of rubber and friction tape. Wire splicing nuts, Thomas and Betts, Sta-Kon or Minnesota Mining and Manufacturing Co., Scotchlock Type R, may be used subject to approval of the local inspector. Joints, tape and splices in wire #6 AWG and larger shall be taped with approved rubber and friction tapes providing insulation not less than that of the conductor over Burndy Servits or equivalent connectors made by Penn Union or Blackburn.
- H. Wire #6 AWG and larger shall be connected to panels and apparatus by means of approved lugs and connectors. Connectors shall be solderless type, sufficiently large to enclose all strands of the conductor and securely fastened.
- I. Non-Metallic Sheath cable shall be supported by staples, cable ties, straps or approved method so designed and installed as to not cause damage to the cable. Cables shall be secured at intervals not to exceed 4 ½" on center and within 12" of every cabinet box or fitting.
- J. Wiring method shall conform to local wiring inspector. Prior to submitting bid, Contractor shall confirm wiring method to be allowed by local ordinances.

3.5 INSTALLATION OF OUTLET BOXES

- A. Outlet boxes shall be of size and type to accommodate structural conditions; size and number of raceways; conductors or cables entering; and device or fixture for which required.
- B. Install blank plates on all outlet boxes in which no apparatus is installed, which do not integrally provide a cover for box.
- C. Special care should be taken to set all boxes correctly, square and true with the building finish. The edge of the box shall come flush with the building finish. As far as possible, all wall and switch outlets shall be erected in advance of furring and fireproofing and shall be secured to the building structure or steel by adjustable strap iron supports, which shall be buried.
- D. The exact location of all outlets and switches in finished rooms shall be obtained from the Architect and from the scale drawings of interior details and finish. Final correct readjustment shall be made to outlets, if necessary, to give proper centering.
- E. The locations given or designated on the Plans for the outlets are subject to notifications. In the case of local wall switches to be set at or near doors, the definite location shall be as established on the side of the door opposite the hinge.

3.6 JUNCTION AND PULL BOXES

- A. Junction and pull boxes shall be furnished and installed under this Section of the Specification where indicated on the Drawings and wherever else such a box may be deemed necessary to facilitate the pulling or splicing of wire and cable.
- B. All such boxes must be made accessible and shall be built only from the approved detail working Drawings. Conduits shall enter these boxes through tight-fitting clearance holes.
- C. The covers of the boxes shall be designed for quick removal. Where junction boxes are required for a splicing box for special recessed fixtures, consult the Architect before installing boxes for these fixtures and determine the exact location of the boxes.
- D. Each feeder passing through a pull box shall meet the approval of the Architect. Generally, junction boxes and pull boxes shall not be exposed in finished areas; where necessary, reroute conduits or make other arrangements to meet the approval of the Architect.

- E. Outlet, pull and junction boxes shall be properly sealed during the course of construction to prevent the entrance of dirt and foreign materials within same or the raceway system of which it is part. The Electrical Contractor shall provide temporary covers for all open boxes. Paper may be solidly packed into standard work boxes to prevent the entrance of dirt and foreign materials, in lieu of cover plates if so elected by the Electrical Contractor.

3.7 LIGHT SWITCHES

- A. In general, convenience outlet circuits shall be independent of light circuits. In all cases the light switches shall be located opposite hinge side of door, per latest Architectural Drawings

3.8 GENERAL PANEL INFORMATION

- A. All panels shall be properly balanced, the circuit numbers on the Plans being a numerical indication rather than any attempt to indicate proper balance.
- B. Care shall be taken in the use of a common neutral to make certain that no more than one leg is taken from each phase.
- C. Typed directories shall be provided in each panel indicating circuit number and the outlets or items controlled or fed from same.

3.9 MOTOR WIRING

- A. The Contractor shall do all wiring required for plumbing, ventilating and heating motors including mounting of switches and starters, as well as wiring of same. All wiring for the control of motors, unless indicated on Electrical Plans, shall be indicated in HVAC, Plumbing and Fire Protection Sections.
- B. The Contractor shall furnish and install starters and fused disconnecting means as required by the National Electrical Code for all motors. Motor-driven equipment specified under "Plumbing" and "Heating and Ventilating" may be factory wired complete with controller and motor
- C. disconnects; therefore, the Contractor should check equipment purchased under these divisions so as to avoid duplication of protective and disconnecting means. Motor disconnects shall be fused unless noted otherwise. Single phase disconnects may be thermal switches.
- D. The Contractor shall furnish and install a fused disconnect at each HVAC unit. Fusing shall be per manufacturer's recommendation. Prior to wiring HVAC units, Contractor shall review submittals on equipment for electrical characteristics.

3.10 VOICE/DATA SYSTEM

- A. Contractor shall furnish and install a fire rated plywood backboard for telephone equipment as indicated on the drawings.
- B. Contractor shall furnish and install raceways from the main voice/data room on the first floor to each satellite data closet in the building as indicated on the drawings. The exact location of the conduit system shall be determined in field and as shown on the Plans.

3.11 FIRE ALARM SYSTEM

- A. INSTALLATION
 - 1. Fire alarm system shall be wired in accordance with manufacturer's complete Wiring Diagram as submitted with Shop Drawings.

2. Power limited, solid, plenum rated fire alarm cable shall be utilized for wiring system components associated with the data loops. #14 solid conductors shall be utilized for signaling circuits.
 3. Provide two complete Wiring Diagrams and maintenance manuals to be turned over to Owner. Provide one additional Wiring Diagram and maintenance manual in control panel.
 4. Entire system shall be guaranteed for one year after final acceptance.
 5. Provide and install the system in accordance with the Plans and Specifications, all applicable codes and the manufacturer's recommendations. All wiring shall be installed in strict compliance with all the provisions of NEC-Article 760 A and C, Power-Limited Fire Protective Signaling Circuits or if required, may be reclassified as non-power limited and wired in accordance with NEC-Article 760 A and B. Upon completion, the Contractor shall so certify in writing to the Owner and General Contractor. All junction boxes shall be painted red and labeled "Fire Alarm". Wiring color code shall be maintained throughout the installation.
 6. Installation of equipment and devices that pertain to other work in the contract shall be closely coordinated with the appropriate Subcontractors.
 7. The Contractor shall clean all dirt and debris from the inside and the outside of the fire alarm equipment after completion of the installation.
 8. The manufacturer's authorized representative shall provide onsite supervision of installation.
- B. TESTING
1. The completed fire alarm system shall be fully tested in accordance with NFPA-72H by the Contractor in the presence of Owner's Representative and the Local Fire Marshall. Upon completion of a successful test, the Contractor shall so certify in writing to the Owner and General Contractor.
- C. WARRANTY
1. The Contractor shall warrant the completed fire alarm system wiring and equipment to be free from inherent mechanical and electrical defects for a period of one year from the date of first beneficial use.
 2. The equipment manufacturer shall make available to the Owner a maintenance contract proposal to provide a minimum of two inspections and tests per year in compliance with NFPA-72H guidelines.
- D. GENERAL
1. The work covered by this Section of the Specifications includes the furnishing of all labor, equipment, materials, and performance of all operations in connection with the installation of the Fire Alarm System as shown on the Drawings and as herein specified.
 2. The requirements of the conditions of the Contract, Supplementary conditions and General Requirements apply to the work specified in this Section.
 3. The complete installation shall conform to the applicable sections of NFPA-72 (A), (B), (C), (D), (E), (F), Local Code Requirements and National Electrical Code with particular attention to Article 760.
 4. The work covered by this Section of the Specifications shall be coordinated with the related work as specified elsewhere under the project Specifications.

E. QUALITY ASSURANCE

1. Each and all items of the fire Alarm System shall be listed as a product of a SINGLE fire alarm system manufacturer under the appropriate category by Underwriters' Laboratories, Inc. (UL), and shall bear the "U.L." label. All control equipment shall be listed under UL category UOJZ as a single control unit. Partial listing shall not be acceptable.
2. In addition to the UL-UOJZ requirement mentioned above, the system controls shall be UL listed for Power Limited Applications per NEC 760. All circuits must be marked in accordance with NEC Article 760-23.

3.12 FIRE ALARM INSPECTION AND TESTING CONTRACT

- A. Prior to making the final connections to the Municipal Alarm System, a Contract must be in evidence between the person holding title to the interior fire alarm system and the holder of a certificate of competency as a fire Alarm Systems Contractor from the Local Fire Department, who will be responsible for the inspection, testing and maintenance of the interior fire alarm system and the Master Fire Alarm Box.
- B. Each manual station or transmitter shall be tested at least twice a year. During bi-monthly test of each system, at least one alarm initiating device shall be tested in each alarm circuit. A report of each month's test shall be forwarded to the Superintendent of Fire Alarm, Local Fire department.
- C. All detectors associated with an interior fire alarm system shall be tested once every twenty-four (24) months, with one-twelfth the number being tested in each monthly test.
- D. Self-restoring detectors shall be exposed to either heat or smoke to test their ability to initiate an alarm.
- E. Fusible link type detectors shall be unscrewed from their holders to test their ability to initiate an alarm. Every six months one (1) fusible link shall be exposed to heat to test the ability of the fusible link to respond to heat.
- F. Bi-monthly test reports shall include the following information;
 1. Date of Test
 2. Name and location being tested
 3. Master Fire Alarm Box number
 4. Number of interior alarm circuits
 5. Number of devices tested and type
 6. Condition of emergency standby power supply
 7. Name of company conducting test
 8. Name and signature of person conducting test
- G. The testing agreement will cover;
 1. Damage resulting from accidents, fire, storm, water, negligence, misuse, vandalism, and defective or improper wiring.
 2. Testing of overflow switches on sprinkler system (waterflow switches to be tested by sprinkler company personnel).
 3. Testing or repairs of door release mechanisms covered in another section of the hardware contract.
 4. Testing or repairs of dampers, smoke hatches, elevator controls, or other peripheral equipment not furnished by the fire alarm manufacturer.

- H. The Electrical Contractor shall furnish and install in accordance with manufacturer's instructions all wiring, conduit, and outlet boxes required for the erection of a complete system as described herein and as indicated on the Drawings.
- I. All wiring shall be as indicated above, and shall meet the requirements of all National, State, and Local Electrical Codes. The sizes of the different wires shall be as specified by the manufacturer. Color code shall be used throughout. All wires shall be tagged at all junction points and shall test free from grounds or crosses between the conductors.
- J. Final connections between the control equipment and wiring system shall be made under direct supervision of a representative of the manufacturer.

3.13 QUIET OPERATION

- A. All equipment and material furnished by this Contractor shall operate under all conditions of load without objectionable noise or vibration, which in the opinion of the Architect is objectionable. Where sound or vibration conditions occur, which the Architect considers objectionable, this Contractor shall eliminate same in a manner approved by the Architect.

3.14 RECORD DRAWINGS

- A. A set of as-built Record Drawings, consisting of a reproducible set of Architect's Drawings with additional sketches as required, denoting and dimensioning accurately all changes in elevation location and size of material deviating from the Architect's Drawings, shall be kept concurrently with the progress of the installation. Upon completion of the work, the Contractor shall deliver to the Architect an up-to-date set of these as-built Record Drawings.

3.15 SUPPLEMENTARY STEEL, CHANNELS AND SUPPORTS

- A. Supplementary steel and channels shall be firmly connected to building construction in a manner approved by the Architect prior to the installation of same. The Electrical Contractor shall submit to the Architect, via the General Contractor the location where he proposes to use supplementary steel and channels, for the support of equipment, fixtures and raceways. The submittal shall indicate the mounting methods, size, and details of the supports, channels and steel. It shall indicate also the weight, which the supports, channels and supplementary steel are to carry.

END OF SECTION 260000