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Bathroom Renovations
160 Foster Center Road
Foster, Rhode Island 02825
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Foster, Rhode Island

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ARCHITECT:  AHARONIAN & ASSOCIATES, INC
310 George Washington Highway
Smithfield, Rhode Island 02917
T (401)232-5010  F (401) 232-5080

PROJECT:  Captain Isaac Paine Elementary School – Bathroom Renovations
160 Foster Center Road
Foster, Rhode Island 02825

Sealed Bids are invited on a General Contract for the above referenced project for the Bathroom Renovations at the Captain Isaac Paine Elementary School. All Bids must be on a **Lump Sum Basis**; segregated Bids will not be accepted. Electronic copies of the **Contract Documents** are available at [www.Paineschool.org](http://www.Paineschool.org)

A **Mandatory Pre-Bid Conference** for this Project will be held on **Wednesday, September 25, 2019 at 10:00am** at the Captain Isaac Paine Elementary School Business Office. Contractors will be required to visit the job site and be completely familiar with all existing conditions as they relate to the Project.

All questions must be submitted by the end of day **Wednesday, October 2, 2019** and will be responded to on **Tuesday, October 8, 2019**. All questions or concerns should be communicated to John O’Biurka, Director of Buildings & Grounds at [JOBiurka@FGSchools.com](mailto:JOBiurka@FGSchools.com).

All Bids must be mailed or delivered to the Captain Isaac Paine Elementary School Business Office located at 160 Foster Center Road, Foster, Rhode Island 02825. Bids must be submitted in a sealed envelope plainly marked on the exterior of the envelope "**BID FOR the CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL BATHROOM RENOVATIONS**". The Business Office will receive bids until **Noon, Friday, October 11, 2019**. Bids received after this time will not be accepted. Faxed Bids will not be accepted. Bids will be opened publicly.

The Bidder must submit a **Bid Bond** in the amount of 5% of the Bid. The successful Bidder must furnish a **Labor and Material Bond and a Performance Bond** equal to 100% of the total Bid Price and a **Certificate of Insurance** naming the Town of Foster as the additional insured on the policy and so stated on the certificate. The Performance Bond and Certificate of Insurance must be provided to the Owner within 7 calendar days after notification of award or the Owner reserves the right to cancel said award. The successful Bidder shall be required to provide Contractor’s Liability Insurance and all other required insurance in the amounts and limits in accordance with the “General Conditions of the Contract for Construction”.

The Bidder shall stipulate the amount of time in calendar days required to complete the Work. The Bidder shall submit a preliminary Construction Progress Schedule reflecting the ability to complete the Work the date established by the Owner.

The Contractor shall be responsible for the cost of obtaining a Building Permit. All other required permits shall be obtained and paid for by the General Contractor or its subcontractors. The successful Bidder shall commence the work within fourteen (14) days of a written Notice to proceed from the Owner. Following the Owner’s Notice to Proceed, the successful bidder shall not begin construction until a copy of the Building Permit is submitted to the Owner.

**END OF DOCUMENT 00 11 16**
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

DOCUMENT 00 21 13
INSTRUCTIONS TO BIDDERS

AIA DOCUMENT A701 - Latest Edition
INSTRUCTION TO BIDDERS

Document not bound herewith. The Contractor and Subcontractors may review the Document at the Office of the Architect. The document is also available, for purchase, from the American Institute of Architects.

Failure to review this document will not relieve parties of the contractual requirements contained herein.

END OF DOCUMENT 00 21 13
SUPPLEMENTS

The following supplements modify, change, delete from or add to AIA Document A701, Latest Edition. Where any Article of the Instructions to Bidders is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provision of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

ARTICLE 2 - BIDDER'S REPRESENTATIONS

Delete subparagraph 2.1.4 in its entirety and substitute the following:

"2.1.4 The Bidder has inspected the site, has familiarized him/herself with the actual conditions under which the Work is to be performed, has correlated the Bidder's personal observations with the requirements of the Contract Documents and has full knowledge of the work required;"

Add the following subparagraph:

"2.1.7 After award of Contract, no claim for additional compensation resulting from misunderstanding of the Contract Documents or resulting from errors in or conflicts within the Contract Documents will be entertained unless interpretations of the Contract Documents specifically relating to the portions thereof, which appear to the Bidder to be in question, error or conflict, are brought to the Owner's attention during the Bidding Period."

ARTICLE 3 - BIDDING DOCUMENTS

Add the following at the end of subparagraph 3.2.2

"Request for clarification and interpretation may be submitted either as paper copy by mail or electronic copy by email"

Add subparagraph 3.2.4:

"3.2.4 No interpretation of the meaning of the Contract Documents will be made to any Bidder orally. Neither the Owner or Architect will be responsible for any oral instructions."

Add subparagraph 3.2.5:

"3.2.5 Failure of any Bidder to receive any such addendum shall not relieve such bidder from any obligation under this bid as submitted."

Add subparagraph 3.3.6:

"3.3.6 Refer to Division 1 specification sections for additional provisions of this document."

ARTICLE 4 - BIDDING PROCEDURES
Delete subparagraph 4.2.1 in its entirety and substitute the following:

"4.2.1 Each bid shall be accompanied by a bid security in the form and amount required [ Five Percent (5%)] as stipulated in the Advertisement For Bids."

Delete subparagraph 4.2.2. in its entirety and substitute the following:

"4.2.2. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and Payment of all obligations arising thereunder. In addition, the Owner shall have any other legal remedies that it is entitled, including but not limited to, any excess of the bid security in relation to the next lowest and qualified bidder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds as required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty."

Subparagraph 4.2.4 in the last sentence after the word "beginning" insert "sixty(60)"

Delete subparagraph 4.3.1 in its entirety and substitute the following:

"4.3.1 A bidder shall submit its bid as indicated within the Invitation to Bid".

ARTICLE 5 - CONSIDERATION OF BIDS

At the end of paragraph 5.1 add the following:

"No award will be made on the date of Bid Opening."

Add subparagraph 5.2.1:

5.2.1 The Owner may reject any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Conditional bids will not be accepted."

Subparagraph 5.3.1 Delete the word "lowest" and insert "most" in its place in the first sentence.

Subparagraph 5.3.1 in the first sentence after the word "Bidder" insert "in the opinion of Owner."

Add subparagraph 5.3.1.1:

"5.3.1.1 The Owner does not obligate him/herself to accept the lowest or any other bid."

Add subparagraph 5.3.1.2:

"5.3.1.2 If the Base Bid exceeds the amount of funds available to finance the construction Contract, the Owner may reject all Bids or may award the Contract to that responsible Bidder submitting the lowest Bid."

Add subparagraph 5.3.1.3:

"5.3.1.3 Notice of Owner's Method of Award:

1. The Owner will use several factors in determining the method of award to the "Responsive Bidder" as follows:

   a. Lowest responsible Lump Sum
   b. Contractor's qualifications with respect to projects of similar scope.
   c. Timely completion"

ARTICLE 6 – POST-BID INFORMATION

Refer to Paragraph 6.1 Contractor's attention is called to submission of a Contractor's Qualification Statement. Such statement shall illustrate Contractor's previous experience.
Contractor's Qualification Statement shall be submitted with his/her proposal.

Delete subparagraph 6.2 in its entirety.

**ARTICLE 7 - PERFORMANCE BOND AND PAYMENT BOND**

Delete subparagraph 7.1.1 in its entirety and substitute the following:

"7.1.1 The Bidder shall furnish a Performance Bond in the amount of one hundred percent (100%) of the contract amount and a Labor and Material Bond in the amount of one hundred percent (100%) of the contract amount as security for faithful performance of this Contract and for the payment of persons performing labor on the project under contract.

Delete subparagraph 7.1.2 in its entirety and substitute the following:

"7.1.2 The cost of such bonds shall be included in the Bid."

Delete subparagraph 7.1.3 in its entirety and substitute the following:

"7.1.3 The surety on such bonds shall be a duly authorized surety company satisfactory to the Owner and authorized to do business in the State of Rhode Island."

Delete subparagraph 7.1.4 in its entirety.

Subparagraph 7.2.1 Delete the first sentence in its entirety and substitute the following:

"Simultaneously with his/her delivery of the executed contract, the Contractor shall deliver the required bonds to the Owner."

**ARTICLE 8 – EMULATION OF THE PROPOSED CONTRACT DOCUMENTS**

Delete paragraph 8.1 and all subparagraphs & replace with the following:

"8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consists of the Documents set forth in the Solicitation and Article 9 of AIA Document A101-2017."

**ARTICLE 9 - SUPPLEMENTARY INSTRUCTIONS**

Add the following paragraphs:

"9.1 CONDITIONS OF WORK"

"9.1.1 Each bidder must inform him/herself of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his/her obligation to furnish all material and labor necessary to carry out the provisions of his/her contract. Insofar as possible, the Contractor, in carrying out his/her work, must employ such methods or means as will not cause any interruption with the work of any other Contractor."

"9.2 LAWS AND REGULATIONS"

"9.2.1 The bidder's attention is directed to the fact that all applicable State Laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full."

"9.3 LIEN RIGHTS"
"9.3.1 The project is municipal property owned by the Towns of Foster, Rhode Island and is thus exempt from liens."

"9.4 STATE SALES AND USE TAX EXEMPTION"

"9.4.1 Bidders and their subcontractors and material suppliers shall not include in their Bids any Rhode Island State Sales and Use Taxes relative to the performance of the Work that is covered by the exemption. The Owner will furnish tax exempt numbers required."

END OF DOCUMENT  00 22 13
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

DOCUMENT 00 41 02
BID FORM

Date: ________________

To: Captain Isaac Paine Elementary School
160 Foster Center Road
Foster, Rhode Island 02825

Attn: Business Office

Project: Captain Isaac Paine Elementary School
Bathroom Renovations
160 Foster Center Road
Foster, Rhode Island 02825

Submitted By: ___________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

(Include in the above spaces, the firm’s legal name, address, telephone and fax numbers, contact and e-mail address. All information should be typed or printed)

NOTE: The Owner’s Selection Criteria shall determine the lowest evaluated or responsive Bid.

1. BASE BID

Having thoroughly examined the Project Site and all matters referred to in the Information for Bidders and in the Bid Documents prepared by Aharonian & Associate, Inc., Architect for the above referenced Project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the sum of:

$ __________, __________

(Numeric)

$ ____________________

(Dollars)

In case of discrepancy, the amount shown in words shall govern. Failure to fill out the above item, if providing a Base Bid, will establish the Bid as non-responsive.

WE HAVE INCLUDED THE 5% BID SURETY AS REQUIRED BY THE INVITATION FOR BIDS.
2. **ADDENDA**

The following Addenda have been received. The modifications to the Bid Documents noted therein have been considered and all costs thereto are included in the Bid Sum.

Addendum #___ Dated ________________
Addendum #___ Dated ________________
Addendum #___ Dated ________________
Addendum #___ Dated ________________

3. **BASE BID BREAKOUT COSTS**

The following line item costs ARE INCLUDED IN THE BASE BID amount and are broken out for use by the Owner.

A. Include list of all Subcontractors with Schedule of Values

4. **BID ALTERNATES**

No Alternates have been established for the Project.

5. **SCHEDULE – CONTRACT TIME**

If the Bid is accepted, unless otherwise indicated on the Bid Form, Bidder hereby agrees to commence the Work under this Contract within fourteen (14) calendar days after issuance of a written "Notice to Proceed" by the Owner. (NOTE: The successful bidder shall not begin construction until a copy of the Building Permit is submitted to Owner.)

Bidder hereby agrees to achieve Substantial Completion of the Work on or before June 16, 2020 and to achieve Final Completion of the Work on or before June 30, 2020.

6. **ADDITIONAL WORK - OVERHEAD AND PROFIT**

The Bidder agrees to be bound by the following percentages of cost basis for overhead, supervision, bond and profit and other general expenses for any additional work. If accepted by the Owner in the award of this Contract, these percentages shall be used in establishing the adjustment to the Contract Sum for additions to or deductions from the Work in accordance with the applicable sections of the General Conditions.

A. To the Contractor for Work performed by its own forces: Maximum ____ percent of the cost.

B. To Subcontractors for Work performed by its own forces: Maximum ____ percent of the cost.

C. The combined overhead and profit for Contractor and Subcontractors: Maximum ____ percent of the cost.

7. **ALLOWANCES**

The above Base Bid Price INCLUDES the costs for the following allowances as outlined in Section 012100 "Allowances".

A. **CONTINGENCY ALLOWANCE:**

1. Provide $10,000.00 allowance for additional Owner requested scope.

B. **INSPECTION AND TESTING ALLOWANCE:**

1. Provide $3,000.00 allowance for testing services.
8. UNIT PRICES

A. If accepted by the Owner in the award of this Contract, Unit Prices shall be used in establishing the adjustment to the Contract Sum for additions to or deductions from the Work in accordance with the applicable sections of the General Conditions. The Unit Prices listed shall include all costs, overhead and profit and no further surcharges are to be added to any Unit Price item of Work that may be done. Work deleted from the Contract will be calculated at 100% of the additional work Unit Prices.

B. Bidder agrees that the Unit Prices will not contain anything to alter or void the Lump Sum Bid submitted herein and that applicable contents of this Bid shall be binding on the Unit Prices and the Work involved whether or not specifically stated.

C. Unit Prices for fabricated items shall include all necessary connections and fastenings required to produce a complete assembly.

D. Unit Price Schedule: No Unit Price requirements are established for the Project.

9. BIDDER ACKNOWLEDGMENTS

A. The Bidder understands that the Owner reserves the right to reject any or all Bids and to waive any formalities in the bidding.

B. The Bidder agrees that this Bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving Bids.

C. Upon written notice of the acceptance of its Bid by the Owner and in accordance with Article 14 of the Information for Bidders, the Bidder shall provide a Certificate of Insurance covering all operations under this Contract. The certificate meeting all conditions set forth therein shall be submitted to the Owner prior to formal execution of the Contract.

D. Upon written notice of the acceptance of its Bid by the Owner, the Bidder shall execute the formal Contract (Document 00 52 00 of the Project Manual) within ten (10) calendar days and deliver to the Owner a Performance Bond and a Payment Bond (Document 00 61 13 of the Project Manual) as required by the General Conditions.

E. The Bid Surety, in the amount of 5% of the Base Bid, is to become the property of the Owner in the event the Contract and Bonds are not executed within the timeframe set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

F. By submission of this Bid, the Bidder certifies, and in the case of a joint Bid, each party thereto certifies as to its own organization, that its Bid has been arrived at independently, without consultation, communication or agreement as to any matter relating to this Bid, with any other Bidder or with any competitor.

10. REQUIREMENT FOR LICENSE NUMBER

A. In compliance with the requirements of Rhode Island General Law, Section 5-65-23, my Rhode Island license number for the Work to be performed by this firm as Prime Contractor is:

LICENSE TYPE: ________________________ LICENSE NUMBER: ________________________
11. BID FORM SIGNATURE(S)

The undersigned declares: that the only person interested in this proposal as principals are named herein as such; that no official of the Owner and no person acting for or employed by the Owner is interested directly or indirectly in this proposal or any contract which may be made under it or in any expected profits to arise there from; that the proposal is made in good faith, without fraud, collusion or connection with any other person bidding or refraining from bidding for the same work; that the Contract Documents relating to the Contract covered by this proposal and in regard to all conditions pertaining to the Work have been examined and has carefully checked the estimates of cost and from them makes this proposal.

Respectively Submitted,

_____________________________________________________________________
Name of Firm

SEAL (if Bid is by a corporation)

_____________________________________________________________________
Signature

_____________________________________________________________________
Title

_____________________________________________________________________
Business Address

_____________________________________________________________________
Telephone Number and Fax Number

The Bidder shall provide an affidavit that the person who has affixed his or her signature to this Bid Form is actively and legally authorized to bind the firm contractually. This affidavit MUST be submitted with and attached to the Bid Form.

END OF DOCUMENT 00 41 02
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

DOCUMENT 00 43 13
BID SECURITY FORM

AIA DOCUMENT A310 – Latest Edition
BID BOND

Document not bound herewith. Contractors and Subcontractors may review the document at the Office of the Architect. The document is also available, for purchase, from the American Institute of Architects.

Failure to review this document will not relieve parties of the contractual requirements contained herein.

END OF DOCUMENT 00 43 13
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

DOCUMENT 00 45 10
CONTRACTOR’S QUALIFICATION STATEMENT

AIA DOCUMENT A305 - Latest Edition
CONTRACTOR’S QUALIFICATION STATEMENT

Document not bound herewith. The Contractor and Subcontractors may review the Document at the Office of the Architect. The document is also available, for purchase, from the American Institute of Architects.

Failure to review this document will not relieve parties of the contractual requirements contained herein.

END OF DOCUMENT 00 45 10
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

AGREEMENT FORM

AIA DOCUMENT A101 - Latest Edition
STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR WHERE THE BASIS
OF PAYMENT IS A STIPULATED SUM

A copy of this Document, as amended, is bound herewith following this page. Agreement made as of the date of
issue of the Purchase Order for this work, and is assumed as executed once the Purchase Order is issued.

Failure to review this document will not relieve parties of the contractual requirements contained herein.

END OF DOCUMENT 00 52 00
AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

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

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

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

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

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. 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.
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ARTICLE 1 THE CONTRACT DOCUMENTS
The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT
The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
§ 3.1 The date of commencement of the Work shall be:
(Insert one of the following boxes.)

[ ] The date of this Agreement.

[ ] A date set forth in a notice to proceed issued by the Owner.

[ ] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

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

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

§ 3.3 Substantial Completion
§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Insert one of the following boxes and complete the necessary information.)
Not later than (   ) calendar days from the date of commencement of the Work.

By the following date:

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

<table>
<thead>
<tr>
<th>Portion of Work</th>
<th>Substantial Completion Date</th>
</tr>
</thead>
</table>

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

ARTICLE 4 CONTRACT SUM

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

§ 4.2 Alternates

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
</table>

§ 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.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
<th>Conditions for Acceptance</th>
</tr>
</thead>
</table>

§ 4.3 Allowances, if any, included in the Contract Sum:

(Identify each allowance.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
</table>

§ 4.4 Unit prices, if any:

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Units and Limitations</th>
<th>Price per Unit ($0.00)</th>
</tr>
</thead>
</table>

§ 4.5 Liquidated damages, if any:

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

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)
ARTICLE 5   PAYMENTS  
§ 5.1 Progress Payments  
§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

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

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

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

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

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

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

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

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

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect’s professional judgment, to be reasonably justified.

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

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

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

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)
§ 5.1.7.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

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

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

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

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

§ 5.2 Final Payment
§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when
.1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
.2 a final Certificate for Payment has been issued by the Architect.

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

§ 5.3 Interest
Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

%.

ARTICLE 6  DISPUTE RESOLUTION
§ 6.1 Initial Decision Maker
The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)
§ 6.2 Binding Dispute Resolution
For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[ ] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[ ] Litigation in a court of competent jurisdiction

[ ] Other (Specify)

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

ARTICLE 7 TERMINATION OR SUSPENSION
§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)

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

ARTICLE 8 MISCELLANEOUS PROVISIONS
§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner’s representative:
(Name, address, email address, and other information)

§ 8.3 The Contractor’s representative:
(Name, address, email address, and other information)
§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

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

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

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS
§ 9.1 This Agreement is comprised of the following documents:
.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
.2 AIA Document A101™-2017, General Conditions of the Contract for Construction

(Paragraph deleted)
.3 Drawings

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
</table>

.4 Specifications

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
</table>

.5 Addenda, if any:

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
</table>

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

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

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

<table>
<thead>
<tr>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
</table>

[ ] Supplementary and other Conditions of the Contract:

<table>
<thead>
<tr>
<th>Document</th>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
</table>

.7 Other documents, if any, listed below:

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

10. **ARTICLE 10 INSURANCE AND BONDS**
The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201-2007. (State bonding requirements, if any, and limits of liability for insurance Required in Article 11 of AIA Document A201-2007.

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

**OWNER** *(Signature)*

*(Printed name and title)*

**CONTRACTOR** *(Signature)*

*(Printed name and title)*
EXHIBIT A 10 INSURANCE AND BONDS

PAGE 7

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
.3 AIA Document A201™–2007, General Conditions of the Contract for Construction
.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
   (Insert the date of the E203-2013 incorporated into this Agreement.)

PAGE 8

.5 Drawings

.6 Specifications

.7 Addenda, if any:

.8 Other Exhibits:

.9 Other documents, if any, listed below:

10. ARTICLE 10 INSURANCE AND BONDS
    The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201-2007. (State bonding requirements, if any, and limits of liability for insurance Required in Article 11 of AIA Document A201-2007.
Certification of Document’s Authenticity
AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 11:27:34 ET on 04/19/2019 under Order No. 4731673679 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A101™ – 2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

SECTION 00 61 13
PERFORMANCE AND PAYMENT BOND FORM

AIA DOCUMENT A312 – Latest Edition
PERFORMANCE AND PAYMENT BOND

Document not bound herewith. Contractors and Subcontractors may review the document at the Office of the Architect. The document is also available, for purchase, from the American Institute of Architects.

Failure to review this document will not relieve parties of the contractual requirements contained herein.

END OF DOCUMENT 00 61 13
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL  
Bathroom Renovations  
Foster, Rhode Island

SECTION 00 72 00  
GENERAL CONDITIONS

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

Document not bound herewith. Contractors and Subcontractors may review the document at the Office of the Architect. The document is also available, for purchase, from the American Institute of Architects.

Failure to review this document will not relieve parties of the contractual requirements contained herein.

END OF DOCUMENT 00 72 00
SUPPLEMENTS

A. The following supplements modify the “General Conditions of the Contract for Construction”, AIA Document A201-2017. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

B. These Supplementary General Conditions are of the abbreviated or "stream-lined" type and include incomplete sentences. Omission of words or phrases such as "the Contractor shall", "in conformity therewith", "shall be", "as noted on the Drawings", "according to the plans", "a", "an", "the", and "all" are intentional. Omitted words and phrases shall be supplied by inference in the same manner as they are when a note occurs on the Drawings. Words "shall be" or "shall" will be supplied by inference when colon (:) is used within sentences or phrases.

C. The Contractor shall provide all items, articles, materials, operations or methods listed, mentioned or scheduled on the Drawings and/or herein, including all labor, materials, equipment and incidentals necessary and required for their completion.

ARTICLE 2 - OWNER

2.1 GENERAL

2.1.1 Delete the first sentence in Paragraph 2.1.1 and substitute the following: “The Owner is the person or entity identified as such in the Agreement between the Owner and the Contractor and is referred to throughout the Contract Documents as if singular in number”.

2.3 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.3.4 At the end of the first sentence in Paragraph 2.3.4, delete “and a legal description of the site “.

ARTICLE 3 – CONTRACTOR

3.1 GENERAL

3.1.1 Delete the first sentence of Subparagraph 3.1.1 and substitute the following: “The Contractor is the person or entity identified in the Agreement between the Owner and Contractor and is referred to throughout the Contract Documents as if singular in number.

3.4 LABOR AND MATERIALS

3.4.2 Add the following Subparagraphs 3.4.2.1 and 3.4.2.2 to Paragraph 3.4.2:

3.4.2.1 After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division I of the Specifications).
3.4.2.2 By making requests for substitutions based on Subparagraph 3.4.2.2 above, the Contractor:

3.4.2.2.1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal to or superior in all respects to that specified;

3.4.2.2.2 represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;

3.4.2.2.3 certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect’s redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and

3.4.2.2.4 will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

3.8 ALLOWANCES

3.8.2.2 Add the following to the end of Subparagraph 3.8.2.2: “except when installation is specified as part of the allowance in the General Requirements (Division 1 of the Specifications).”

ARTICLE 5 - SUBCONTRACTORS

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

5.2.1 Add the following Subparagraph 5.2.1.1 to Paragraph 5.2.1:

5.2.1.1 Not later than 15 days after the date of commencement, the Contractor shall furnish in writing to the Owner, through the Architect, the names of persons or entities proposed as manufacturers for each of the products identified in the General Requirements (Division 1 of the Specifications) and, where applicable, the name of the installing Subcontractor.

ARTICLE 7 – CHANGES IN THE WORK

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.4 In the first sentence, delete the words “a reasonable amount” and substitute “an allowance for overhead and profit in accordance with Subparagraph 7.3.11 below: “

7.3.11 In Subparagraph 7.3.4, the allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:

7.3.11.1 For the Contractor, for Work performed by the Contractor’s own forces, (10) ten percent of the cost.

7.3.11.2 For the Contractor, for Work performed by the Contractor’s Subcontractor, (10) ten percent of the amount due the Subcontractor.

7.3.11.3 For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor’s or Sub-subcontractor’s own forces, (12) twelve percent of the cost.

7.3.11.4 For each Subcontractor, for Work performed by the Subcontractor’s Sub-subcontractors, (10) ten percent of the amount due the Sub-subcontractor.

7.3.11.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.4.

7.3.11.6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Sub-Contracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Sub-Contracts, they shall be
Aharonian & Associates, Inc. – Architects
Captain Isaac Paine Elementary School – Bathroom Renovations Foster, Rhode Island

itemized also. In no case will a change involving over $500.00 be approved without such itemization.

ARTICLE 9 – PAYMENTS AND COMPLETION

9.3 APPLICATIONS FOR PAYMENT

9.3.1 Add the following sentence to Subparagraph 9.3.1: “The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet.”

9.8 SUBSTANTIAL COMPLETION

9.8.5 Add the following sentence to Subparagraph 9.8.5: “The payment shall be sufficient to increase the total payments to 95 percent of the Contract Sum, less such amounts the Architect shall determine for incomplete work or unsettled claims.”

ARTICLE 10 – PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1 Add the following Subparagraphs 10.1.2 and 10.1.3 to Paragraph 10.1:

10.1.2 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance 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 the Architect in writing. The Owner, Contractor and Architect shall then proceed in the same manner described in Subparagraph 10.1.3.

10.1.3 The Owner shall be responsible for obtaining the services of a licensed laboratory to verify a presence or absence of the material or substance reported by the Contractor and, in the event the material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or the Architect has reasonable objection to the persons or entities proposed by the Owner, the Owner shall propose another to whom the Contractor or the Architect has no reasonable objection.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.3 Add the following Subparagraph 10.2.3.1 to Paragraph 10.2.3:

10.2.3.1 When the use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary, the Contractor shall give the Owner reasonable advance notice.

ARTICLE 11 – INSURANCE AND BONDS

11.1.1 Delete the first sentence and replace with the following: “The Contractor shall purchase and maintain insurance & provide bonds of the types and units of liability, containing the endorsements, and subject to the items and conditions as set forth in the Solicitation, Agreement, Section 00 73 16 Insurance Requirements, or elsewhere in the Contract Documents.”

ARTICLE 13 – MISCELLANEOUS PROVISIONS

Add the following Paragraphs to Article 13:
13.6 EQUAL OPPORTUNITY

13.6.1 The Contractor shall maintain policies of employment as follows:

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

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

13.7 STATE SALES AND USE TAX EXEMPTION

13.7.1 Bidders and their Subcontractors and material suppliers shall not include in their Bids any Rhode Island State Sales and Use Taxes relative to the performance of the Work that is covered by the exemption. The Owner will furnish tax exempt numbers required.

13.8 NOTICE OF DEFINITION OF OWNER

13.8.1 The “Owner” as referred to in these specifications is the Foster School District

END OF DOCUMENT 00 73 00
The successful Bidder shall be required to provide Contractor’s Liability Insurance and all other required insurance in the amounts and limits in accordance with the General Conditions contained in Document 00 52 00 Agreement Form and the following:

1.01 CONTRACTOR'S LIABILITY INSURANCE

A. Liability insurance shall include all major divisions of coverage and be on a comprehensive basis, including:

1. Premises Operations (including X-C and U as applicable).
2. Independent Contractors’ Protective.
5. Contractual, including specified provision for Contractor’s obligation under Paragraph 3.18.
6. Owned, non-owned and hired motor vehicles.
7. Broad Form Property Damage, including Completed Operations.
8. Owner’s Protective.

B. If the General Liability coverage's are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverage's required to be maintained after final payment.

C. The insurance required shall be written for not less than the following, or greater if required by law:

1. Workers’ Compensation:
   a. State Statutory
      b. Applicable Federal (e.g., Longshoremen’s) Statutory
      c. Employer’s Liability $500,000 per Accident
       $500,000 Disease, Policy Limit
       $100,000 Disease, Each Employee

2. Comprehensive or Commercial General Liability (including Premises-Operations; Independent Contractors’ Protective; Products and Completed Operations; Broad Form Property Damage):
   a. Bodily Injury:
      $1,000,000 Each Occurrence
      $1,000,000 Annual Aggregate
   b. Property Damage:
      $1,000,000 Each Occurrence
      $1,000,000 Annual Aggregate
   c. Products and Completed Operations to be maintained for two years after final payment.
   d. Property Damage Liability Insurance shall provide X, C or U coverage.
3. Broad Form Liability Insurance shall provide X, C and U coverage. Contractual Liability:

   a. Bodily Injury:
      $2,000,000
      $2,000,000
      $2,000,000
      $2,000,000
      Each Occurrence
      Aggregate

   b. Property Damage:
      $2,000,000
      $2,000,000
      Each Occurrence
      Aggregate

4. Personal Injury, with Employment Exclusion deleted:

   a. Personal Injury:
      $1,000,000
      Aggregate

5. Business Auto Liability (including owned, non-owned and hired vehicles):

   a. Bodily Injury:
      $1,000,000
      $1,000,000
      Each Person
      Each Occurrence

   b. Property Damage:
      $1,000,000
      Each Occurrence

6. Umbrella Excess Liability:

   a. Excess Liability:
      $2,000,000
      Over Primary Insurance

D. If this insurance is written on the Comprehensive General Liability policy form, the Certificates shall be AIA Document G715, ACORD Certificate of Insurance. If this insurance is written on the Commercial General Liability policy form, ACORD Form 25S will be acceptable.

1.02 PROPERTY INSURANCE

A. If this insurance is written on the Comprehensive General Liability policy form, the Certificates shall be AIA Document G715, ACORD Certificate of Insurance. If this insurance is written on the Commercial General Liability policy form, ACORD Form 25S will be acceptable.

B. The insurance required is not intended to cover machinery, tools or equipment owned or rented by the Contractor which are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor shall, at the Contractor’s own expense, provide insurance coverage for owned or rented machinery, tools or equipment.
DOC007339

MINORITY BUSINESS ENTERPRISE REQUIREMENTS

It is the policy of the State of Rhode Island that minority business enterprises (MBEs) shall have the maximum opportunity to participate in the performance of all procurements and projects funded in whole or in part with state funds. Rhode Island General Law 37-14.1-6 states that “Minority business enterprises shall be included in all procurements and construction projects under this chapter and shall be awarded a minimum of ten percent (10%) of the dollar value of the entire procurement or project.”

The bidder’s compliance with MBE/WBE participation requirements will be evaluated on the basis of a percentage of the total contract. Bidders agree that the participation commitment shall apply to the total contract price, inclusive of all modifications and amendments, if awarded.

Prior to the approval and issuance of a contract, a letter of approval from the Office of Diversity, Equity and Opportunity (ODEO), Minority Business Enterprise Compliance Office that you have satisfied the requirements of RIGL 37-14.1 will be required. To initiate this process, you must submit a completed “MBE Utilization Plan” form to Dorinda Keene at the Office of Diversity, Equity and Opportunity, MBE Compliance Office, One Capitol Hill, 3rd Floor, Providence, RI 02908. Plans may be submitted electronically to Dorinda.Keene@doa.ri.gov. For further information, call (401) 574-8670, or visit the MBE website located at www.mbe.ri.gov.

The Contract will be awarded to the responsible Bidder submitting the lowest proposal complying with the conditions of the Invitation to Bid provided the Bid is reasonable and it is in the interest of the Owner to accept it. The Bidder to whom the award is made will be notified at the earliest practicable date. The Owner reserves the right to reject any and all Bids and to waive any informalities in Bids received whenever such rejection or waiver is in the interest of the Owner. No Bidder may withdraw its bid within sixty (60) calendar days after the actual date of opening thereof.

END OF DOCUMENT 00 73 39
The State of Rhode Island Department of Labor, Division of Professional Regulation General Decision Modification document, in effect at the time of the Bid issuance for this Project, is an integral part of the Bid Documents for use in fulfilling prevailing wage rate requirements. A copy is available on the web site of the State of Rhode Island Department of Administration, Division of Purchases.

The Division of Purchases Web Site Address:

www.purchasing.ri.gov

Click on “Information”; click on “Prevailing Wage Table”.

Documents are not contained within this Project Manual but may be obtained from the State of Rhode Island, Department of Labor and Training, Division of Professional Regulations, 1511 Pontiac Avenue, Cranston, RI 02920-4407, Tel. No. 401-462-8580.

The Foster School District will require copies of certified payrolls to be submitted with the monthly application for payment. Said Certified payrolls must be submitted to Foster Finance Office, 181 Howard Hill Road, Foster, RI 02825.

END OF DOCUMENT 00 73 46
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL  
Bathroom Renovations  
Foster, Rhode Island  

DOCUMENT 00 91 13  
ADDENDA  

PART 1  GENERAL  

1.01 WORK COVERED BY CONTRACT DOCUMENTS  

A. As of the time of publication of this project manual no addenda had been issued.  

B. Should Addenda be issued during the Bid Period, they will augment this Document and become a part of the Project Manual.  

C. Such Addenda and Modifications when issued, with reference to the Project Manual, the General Conditions, Supplemental General Conditions, Drawings or Specifications, shall be inserted following this page and become integral parts of the Contract Documents.  

PART 2  PRODUCTS (Not Applicable)  

PART 3  EXECUTION (Not Applicable)  

END OF SECTION 00 91 13
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

DOCUMENT 00 92 00
LIST OF DRAWING SHEETS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work specified in this Document.

1.02 REFERENCE

A. The Drawings hereinafter listed represent an integral part of the Contract Documents. They should not be considered as a separate entity, as along with the technical specifications, form a process of disseminating information required to perform the Work of this Project.

B. The Drawings may be issued in multiple packages or phases. The Schedule below will be modified as these packages are issued.

1.03 SCHEDULE

A. The following schedule indicates the Drawings of this Contract. The manner of listing and respective order are for convenience only and do not obligate the Contractor to perform the Work in any specific sequence. The work indicated on each drawing should not be construed as specific work for a specific trade, subcontractor or supplier.

B. SCHEDULE OF DRAWINGS:

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>COVER SHEET</td>
</tr>
<tr>
<td>D1.1</td>
<td>DEMOLITION FLOOR PLAN</td>
</tr>
<tr>
<td>A1.1</td>
<td>FLOOR PLAN, PARTITION TYPES, FIXTURE SCHEDULE</td>
</tr>
</tbody>
</table>

PART 2  PRODUCT (Not Applicable)

PART 3  EXECUTION (Not Applicable)

END OF DOCUMENT 00 92 00
SECTION 01 11 00
SUMMARY OF WORK

PART 1  GENERAL

1.01  WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of selective demolition and renovation of one pair of existing Men’s and Women’s toilet rooms to improve appearance, functionality and accessibility.

B. The Work includes but is not limited to concrete work, masonry work, interior finishes, metal doors and frames, toilet partitions and toilet accessories, plumbing and miscellaneous electrical work.

C. Coordination with Owner’s separate concurrent contracts, if any.

D. The Work will be constructed under a single prime construction contract.

E. Before starting work, all Contractor workers and Subs are required to obtain and submit a current BCI and State-approved picture ID. The Owner reserves the right to deny access to any worker based on information provided on the submitted BCI. All BCI’s to be from Rhode Island and the Workers State of Residence and be current within six (6) calendar months of start of onsite work.

1.02  RELATED DOCUMENTS

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

1.03  FUTURE WORK

A. FUTURE CONTRACT: The Owner reserves the right to award contracts for additional work to be performed at the site during construction and following the Substantial Completion. Completion of that future work depends on the progress of, and the successful and timely completion of, the preparatory and related Work of this Contract.

1.04  CONTRACTOR AND CONTRACTOR USE OF PREMISES

A. GENERAL: During the construction period, the Contractor shall have use of the premises for construction operations, including use of the site, to the extent as directed by the Owner. Their use of the premises is also limited by the Owner's right to perform work or to retain other contractors on portions of the Project.

B. USE OF THE SITE: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated or as allowed by the Owner.
1.05 OCCUPANCY REQUIREMENTS

A. PARTIAL OWNER OCCUPANCY: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. The Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner occupancy.

2. Obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.

3. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions of the building.

4. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions of the building.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTIONS (Not Applicable)

END OF SECTION 01 11 00
SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

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

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Defect assessment.

E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

A. Section 00 52 00 – Agreement Form: Contract Sum, retainages, and monetary values of unit prices.

B. Section 00 72 00 – General Conditions: Additional requirements for progress payment, final payment, changes in the Work.

C. Section 01 20 00 – Unit Prices: Monetary values of unit prices; Payment and modification procedures relating to unit prices.

D. Section 01 21 00 – Allowances: Payment procedures relating to allowances.

E. Section 01 23 00 – Alternates.

F. Section 01 31 13 – Project Coordination.

G. Section 01 33 00 – Submittal Procedures.

H. Section 01 78 00 – Closeout Procedures Submittals: Project Record Documents.

1.03 SCHEDULE OF VALUES

A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.

B. Forms filled out by hand will not be accepted.

C. Submit Schedule of Values in duplicate within 15 days after date established in Notice to Proceed.

D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization, bonds and insurance, general conditions and closeout.
E. Include in each line item, the amount of Allowances specified in Section 01 21 00 Allowances. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

F. Include separately from each line item, a direct proportional amount of Contractor’s overhead and profit.

G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Use form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
   1. Prepare a draft version “pencil copy” of each application and distribute via email 5 days prior to due date for review by Architect and Owner’s Representative.
   2. After making agreed revisions, individually sign and notarize with notary’s official seal, all copies. Deliver to Owner’s Representative for further processing and distribution.
   3. For each item, provide a For each item, provide a column for listing: Item Number; Description of Work; Scheduled Value. Previous Applications: Work in Place and Stored Materials under this Application: Authorized Change Orders; Total Completed and Stored to Date of Application; Percentage of Completion; Balance to Finish; and Retainage

C. Forms filled out by hand will not be accepted.

D. Execute certification by signature of authorized officer.

E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

F. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

G. Submit three hard-copies of each Application for Payment.

H. Include the following with the application:
   1. Transmittal letter as specified for submittals in Section 01 33 00.
   2. Construction progress schedule, revised, updated and current.
   3. Partial release of liens from major subcontractors and vendors.
   4. Project record documents as specified in Section 01 78 39, for review by Owner which will be returned to the Contractor.
   5. Affidavits attesting to off-site stored products.
   6. Copies of any/all inspection reports, by the authorities having jurisdiction performed since submission of previous requisitions are to be submitted to Architect prior to or coinciding with applications for payment. Failure to submit inspection reports will be considered grounds for withholding payments.

I. When Architect requires substantiating information, submit data justifying dollar amounts in questions. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 CHANGE PROCEDURES

A. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201/CM Article 12.4 by issuing supplemental instructions on AIA Form G710 Architect’s Supplemental Instruction or other similar form.
B. The Architect may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within 7 days.

C. The Contractor may propose a change by submitting request for change to the Architect, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 60 00.

D. STIPULATED SUM/PRICE CHANGE ORDER: Based on Proposal Request and Contractor's fixed or maximum price quotation or Contractor's request for a Change Order as approved by Architect.

E. UNIT PRICE CHANGE ORDER: For pre-determined 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 Work under a Construction Change Authorization. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

F. CONSTRUCTION CHANGE AUTHORIZATION: Architect may issue a directive, on AIA Form G713 Construction Change Authorization or similar form, 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 Contract Sum/Price or Contract Time. Promptly execute the change.

G. TIME AND MATERIAL CHANGE ORDER: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Architect will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.

H. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

I. CHANGE ORDER FORMS: AIA G701 Change Order.

J. EXECUTION OF CHANGE ORDERS: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.06 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Architect, it is not practical to remove and replace the work, The Architect will direct an appropriate remedy or adjust payment.

C. The defective Work may remain, but the unit sum will be adjusted to a new sum at the discretion of the Architect.

D. The defective Work will be partially repaired to the instructions of the Architect, and the unit sum will be adjusted to a new sum at the discretion of the Architect.

E. The individual Specification Sections may modify these options or may identify a specific formula or percentage sum reduction.

F. The authority of the Architect to assess the defect and identify a payment adjustment is final.

G. Non-Payment for Rejected Products: Payment will not be made for rejected products for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable
Aharonian & Associates, Inc. – Architects
Captain Isaac Paine Elementary School – Bathroom Renovations
Foster, Rhode Island

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.

1.07 APPLICATION FOR FINAL PAYMENT

A. Reference the General Conditions, and as may otherwise be required in the Contract Documents.

B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments and sum remaining due.

C. Application for Final Payment will not be considered until the following have been accomplished:
   1. All closeout procedures specified in Section 017800.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees and similar obligations were paid.
   3. AIA Document G706, "Contractor’s Affidavit of Payment and Debts and Claims”.
   4. AIA Document G706A, "Contractor’s Affidavit of Release of Liens”.
   5. AIA Document G707, "Consent of Surety to Final Payment”.
   6. Evidence that claims have been settled.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTIONS (NOT USED)

END OF SECTION 01 20 00
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL  
Bathroom Renovations  
Foster, Rhode Island  

SECTION 01 21 00  
ALLOWANCES 

PART 1  GENERAL 

1.01  SECTION INCLUDES 

A. Cash allowances.  
   1. Lump Sum Allowances  
   2. Unit-Cost Allowances  
B. Contingency allowances.  
C. Inspection and testing allowances.  
D. Selection & Purchase.  
E. Unused materials.  

1.02  RELATED SECTIONS 

A. Section 01 20 00 – Price and Payment Procedures.  
B. Section 01 22 00 – Unit Prices.  

1.03  CASH ALLOWANCES 

A. COSTS INCLUDED IN ALLOWANCES: Cost of Product to Contractor, or Subcontractor, less applicable trade discounts; delivery to site and applicable taxes.  

B. COSTS NOT INCLUDED IN THE ALLOWANCE: Product handling at the site, including unloading, uncrating and storage; protection of Products from elements and from damage and labor for installation and finishing.  

C. ARCHITECT RESPONSIBILITIES:  
   1. Consult with Contractor in consideration and selection of Products, suppliers and installers.  
   2. Select Products in consultation with Owner and transmit decision to Contractor.  
   3. Prepare Change Order.  

D. CONTRACTOR RESPONSIBILITIES:  
   1. Obtain proposals from suppliers and installers and offer recommendations. Assist Architect in selection of Products, suppliers and installers.
2. On notification of selection by Architect, execute purchase agreement with designated supplier and installer.

3. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.

4. Promptly inspect Products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Funds will be drawn from Cash Allowances only by Change Order.

1.04 CONTINGENCY ALLOWANCES

A. Contractor’s costs for Products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Allowance.

B. Funds will be drawn from Contingency Allowance only by Change Order.

C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.05 INSPECTION AND TESTING ALLOWANCES

A. COSTS INCLUDED IN ALLOWANCES: Cost of engaging an inspection or testing firm, execution of inspection or tests, reporting results.

B. COSTS NOT INCLUDED IN THE ALLOWANCE

1. Incidental labor and facilities required to assist inspection or testing firm.

2. Costs of testing laboratory services required by Contractor separate from Contract Document requirements.

3. Costs of retesting upon failure of previous tests as determined by Architect.

C. PAYMENT PROCEDURES

1. Submit one copy of the inspection or testing firm's invoice with next application for payment.

2. Pay invoice on approval by Architect.

D. Funds will be drawn from inspection and testing allowances only by Change Order.

E. At Project closeout, credit unused amounts remaining in the inspection and testing allowance to Owner by Change Order.

1.06 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At the Architect’s request, obtain proposals for each Allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by the Architect from the designated supplier.
1.07 UNUSED MATERIALS

A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.

1. When requested by the Architect, prepare unused material for storage by Owner where it is not economically practical to return the material for credit. When directed by the Architect, deliver unused material to the Owner's storage space. Otherwise, disposal of unused material is the Contractor's responsibility.

1.08 SCHEDULE OF ALLOWANCES

A. CASH ALLOWANCES.

1. No cash allowances have been established to date.

B. CONTINGENCY ALLOWANCES.

1. Provide $10,000.00 allowance for additional Owner requested scope.

C. INSPECTION AND TESTING ALLOWANCES.

1. Provide $3,000.00 allowance for testing services.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Used)

END OF SECTION 01 21 00
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

SECTION 01 22 00
UNIT PRICES

PART 1  GENERAL

1.01  SECTION INCLUDES
A. This Section includes administrative and procedural requirements for unit prices.

1.02  RELATED SECTIONS
A. Section 01 20 00 – Price and Payment Procedures.
B. Section 01 21 00 - Allowances

1.03  DEFINITIONS
A. Unit Price: An amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.  The Owner may or may not accept the unit prices proposed by the Contractor at the time of bid.

2.  Owner reserves the right to negotiate or renegotiate the unit prices at any time during the contract time.

1.04  PROCEDURES
A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

1.05  MEASUREMENT – GENERAL
A. Reference the General Conditions for additional requirements on Unit Price Work.

B. All unit prices which are specified for measurement by the linear foot (LF) shall be measured from the beginning to the termination point of the unit being measured.

C. Units of measure shall be as follows unless specified otherwise.
<table>
<thead>
<tr>
<th>Item</th>
<th>Method of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS</td>
<td>Lump Sum - Unit is one; no measurement will be made.</td>
</tr>
<tr>
<td>EA</td>
<td>Each - Field count by Engineer</td>
</tr>
<tr>
<td>LF</td>
<td>Linear Foot - Field measure by Engineer</td>
</tr>
<tr>
<td>SF</td>
<td>Square Foot - Field measure by Engineer</td>
</tr>
<tr>
<td>SY</td>
<td>Square Yard - Field measured by Engineer</td>
</tr>
<tr>
<td>CY</td>
<td>Cubic Yard – Field measure by Engineer using the Average-End-Area Method to calculate volume</td>
</tr>
<tr>
<td>TON</td>
<td>Ton - Certified truck scale</td>
</tr>
</tbody>
</table>

**PART 2  PRODUCTS (Not Applicable)**

**PART 3  EXECUTION**

3.01  SCHEDULE OF UNIT PRICES

A. No unit prices have been established to date.

**END OF SECTION  01 22 00**
PART 1  GENERAL

1.01  SECTION INCLUDES
   A. Administrative and procedural requirements for alternates.

1.02  RELATED DOCUMENTS AND SECTIONS
   A. Division 00 Documents and Division 01 Sections.

1.03  DEFINITIONS
   A. Alternate: An amount proposed by Bidders and noted on the Bid Form for certain Work defined in the
      Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to
      accept a corresponding change either in the amount of construction to be completed or in the products,
      materials, equipment, systems or installation methods described in the Contract Documents.

      1. The cost or credit for each Alternate is the net addition to or deduction from the Contract Sum to
         incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

1.04  PROCEDURES
   A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of
      the Alternate into Project.

      1. Include as part of each Alternate, miscellaneous devices, accessory objects, and similar items
         incidental to or required for a complete installation whether or not indicated as part of Alternate.

   B. Immediately following award of the Contract, notify each party involved, in writing, of the status of each
      Alternate. Indicate if Alternates have been accepted, rejected or deferred for later consideration. Include
      a complete description of negotiated modifications to Alternates.

   C. Execute accepted Alternates under the same conditions as other work of the Contract.

   D. A Schedule of Alternates is included at the end of this Section.

PART 2  PRODUCTS (Not Applicable)

PART 3  EXECUTIONS

3.01  SCHEDULE OF ALTERNATES
   A. No Alternates have been established to date.
SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 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.

1.02 SUMMARY
   A. Section includes administrative and procedural requirements for substitutions.

1.03 RELATED SECTIONS
   A. Section 01 60 00 –Product Requirements.

1.04 DEFINITIONS
   A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by General Contractor.
   B. Substitutions for Cause: Changes proposed by General Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   C. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to General Contractor or Owner. No substitutions for convenience are permitted.

1.05 ACTION SUBMITTALS
   A. Substitution Requests: Submit one (1) copy of each request, in PDF format, for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section Number and Title, and Drawing Numbers and Titles.
      1. Substitution Request Form: Use form provided at the end of this section.
      2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
         a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
         b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
         c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Detailed comparison of General Contractor’s construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. General Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
l. General Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Owner’s Representative Action: If necessary, Owner’s Representative will request additional information or documentation for evaluation within five (5) working days of receipt of a request for substitution. Owner’s Representative will notify General Contractor of acceptance or rejection of proposed substitution within ten (10) working days of receipt of request, or five (5) working days of receipt of additional information or documentation, whichever is later.
a. Forms of Acceptance: Change Order, Construction Change Order, or Owner’s Representative Supplemental Instructions for minor changes in the Work.
b. Use product specified if Owner’s Representative does not issue a decision on use of a proposed substitution within time allocated.

1.06 QUALITY ASSURANCE
A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.07 PROCEDURES
A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 PRODUCTS

2.01 SUBSTITUTIONS
A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than fifteen (15) days prior to the time required for preparation and review of related submittals.

1. Conditions: Owner’s representative will consider General Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner’s Representative will return requests without action, except to record noncompliance with these requirements:
   a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Requested substitution provides sustainable design characteristics that specified product provided.
c. Substitution request is fully documented and properly submitted.
d. Requested substitution will not adversely affect General Contractor’s construction schedule.
e. Requested substitution has received necessary approvals of authorities having jurisdiction.
f. Requested substitution is compatible with other portions of the Work.
g. Requested substitution has been coordinated with other portions of the Work.
h. Requested substitution provides specified warranty.
i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not permitted.

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION 01 25 00
**Aharonian & Associates, Inc. – Architects**  
Captain Isaac Paine Elementary School – Bathroom Renovations  
Foster, Rhode Island

<table>
<thead>
<tr>
<th>Request Phase</th>
<th>Pre-Tender □</th>
<th>Post Tender □</th>
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<tr>
<td>(If Pre-tender only) Current Tender Due Date:</td>
<td>Request No.:</td>
<td>Dated:</td>
</tr>
<tr>
<td>Project No.:</td>
<td>Contract No.:</td>
<td></td>
</tr>
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<td>Project Name/Location:</td>
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<th>Section(s):</th>
<th>Paragraph(s):</th>
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<tr>
<td>Drawing(s):</td>
<td>Drawing(s) No.(s):</td>
<td>Detail(s) No.(s):</td>
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</tbody>
</table>

Contractually Specified Product:  
Contractor Proposed Product:  

Proposed Product is:  Equal: □  Substitute: □

See attached data for both specified and proposed products as required by Section 01 60 00.

<table>
<thead>
<tr>
<th>Data attached:</th>
<th>Drawings: □</th>
<th>Product Data: □</th>
<th>Reports: □</th>
<th>Samples: □</th>
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<tr>
<td>Tests: □</td>
<td>Other:</td>
<td></td>
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</table>

Reason(s) for not providing the Specified Product:

Similar Installation:  
Project:  
Address:  
Architect:  
Owner:  
Date Installed:  

Post-Tender:  
Will proposed substitution impact other parts of the Work?  No □  Yes □  *If yes attach explanation by*  
Will proposed substitution increase Contract Time?  No □  Yes □  *number of Days: _________*

Actual Dollar Savings if substitution is accepted:  $ ________________________

The undersigned Certifies that the proposed Request for an Equal or Substitute conforms to all of the requirements of Division 01 General Requirements, Section 01 25 00 Substitution Procedures.

Request Submitted By General Contractor:  
(Firm’s Name)  
By:  
(Print Name)  
(Title)  
(Signature)  
(Date)

Owner’s Representative Review – This Substitution Request is:  
Request Received on (Date): ______________________

- □ Approved:  
  (Submittals in accordance with Div. 01 General Requirements, Section 01 33 00 Submittal Procedures.)

- □ Approved as Noted:  
  (Submittals in accordance with Div. 01 General Requirements, Section 01 33 00 Submittal Procedures.)

- □ Rejected:  
  Use Specified Materials.

- □ Rejected:  
  Request Not Received Within Specified Time Period – Use Specified Materials.

Reviewed issue By:  
(Print Name)  
(Signature)  
(Date)
SECTION 01 31 13
PROJECT COORDINATION

PART 1  GENERAL

1.01  SECTION INCLUDES

A. Administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:

1. General project coordination, administrative procedures and conservation.

2. Submittals.

3. Field engineering.

4. Cleaning and protection.

1.02  RELATED SECTIONS

A. Section 01 31 19 - Project Meetings: Progress and coordination meetings, pre-installation conferences.

B. Section 01 33 00 – Submittal Procedures: Contractor's Construction Schedule.

C. Section 01 60 00 – Product Requirements: Materials and Equipment.

D. Section 01 78 00 – Closeout Procedures and Submittals.

E. Section 01 78 39 - Project Record Documents.

1.03  COORDINATION

A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection and operation.

1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

3. Make provisions to accommodate items scheduled for later installation.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports and attendance at meetings.
1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.

C. ADMINISTRATIVE PROCEDURES: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project closeout activities.

D. CONSERVATION: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

1.04 SUBMITTALS

A. COORDINATION DRAWINGS: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Show the relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.
3. Comply with requirements contained in Section 01 33 00 – Submittal Procedures.

B. STAFF NAMES: Within 15 days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.

1. Post copies of the list in the Project meeting room, the temporary field office and each temporary telephone.

1.05 FIELD ENGINEERING

A. Employ a Land Surveyor registered in the State of Rhode Island and acceptable to the Architect.

B. Contractor to locate and protect survey control and reference points.

C. Control datum for survey is that shown on Drawings.

D. Provide field engineering services. Establish elevations, lines and levels utilizing recognized engineering survey practices.

E. Submit a copy of registered site drawing and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.
PART 2  PRODUCTS (Not Applicable)

PART 3  EXECUTION

3.01  GENERAL COORDINATION PROVISIONS

A.  INSPECTION OF CONDITIONS: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B.  Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.02  CLEANING AND PROTECTION

A.  Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.

B.  Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period.

C.  LIMITING EXPOSURES: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1.  Excessive static or dynamic loading; Excessive internal or external pressures.

2.  Excessively high or low temperatures; Thermal shock; Excessively high or low humidity; Water or ice.

3.  Air contamination or pollution; Solvents, chemicals, light, radiation; Excessive weathering.

4.  Puncture, abrasion, heavy traffic.

5.  Soiling, staining and corrosion.

6.  Bacteria; Rodent and insect infestation.

7.  Combustion; Electrical current.

8.  High-speed operation; Improper lubrication; Unusual wear or other misuse; Misalignment.

9.  Contact between incompatible materials.

10.  Destructive testing;

11.  Unprotected storage, improper shipping or handling.

12.  Theft or vandalism.

END OF SECTION  01 31 13
SECTION 01 31 19
PROJECT MEETINGS

PART 1   GENERAL

1.01   SECTION INCLUDES

A. Pre-Construction Conference and Progress Meetings

1.02   REQUIREMENTS INCLUDED

A. The Contractor shall schedule and administer the Pre-Construction Conference and shall:
   1. Prepare the agenda for the meeting.
   2. Notify all parties required to attend meeting.
   3. Make physical arrangements for meeting.
   4. Preside at meeting.
   5. Record the minutes, including significant proceedings and decisions.
   6. Reproduce and distribute copies of minutes within seven (7) calendar days after the meeting to participants in the meeting and other parties affected by decisions made at the meeting.

B. The Contractor shall schedule and administer periodic progress meetings, and specially called meetings throughout the progress of the work. The Contractor shall:
   1. Prepare agenda for meetings.
   2. Make physical arrangements for meetings.
   3. Preside at meetings.
   4. Record the minutes, including significant proceedings and decisions.
   5. Reproduce and distribute copies of minutes within five (5) calendar days after each meeting to participants in the meeting and other parties affected by decisions made at the meeting.

C. Representatives of Contractors, Subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.03   PRE-CONSTRUCTION CONFERENCE

A. ATTENDANCE: Owner and/or representative, Architect, Contractor, Contractor's Superintendent, major Subcontractors, major suppliers and others as appropriate.
B. SUGGESTED AGENDA:

1. Distribution and discussion of
   a. List of major Subcontractors and suppliers.
   b. Projected construction schedules.

2. Critical work sequencing.

3. Major equipment deliveries and priorities.

4. PROJECT COORDINATION: Designation of responsible personnel.

5. Procedures and processing of Field decisions, Proposal requests, Submittals, Change Orders and Applications for Payment.


7. Procedures for maintaining Project Record Documents.

8. USE OF PREMISES:
   a. Office, work and storage areas.
   b. Owner's requirements.


11. Temporary utilities.


15. Place, date and time for regular progress meetings.

1.03 PROGRESS MEETINGS

A. Conduct regular scheduled progress meetings at place, dates and times agreed upon at the Pre-Construction Conference.

B. Conduct additional meetings as progress of the work dictates.

C. ATTENDANCE: Architect and his professional consultants as needed, Owner or representative (when required), Contractor, Contractor's Superintendent, Subcontractors as appropriate to the agenda, suppliers as appropriate to the agenda and others as required.

D. SUGGESTED AGENDA

1. Review approval of minutes of previous meeting.

2. Review of work progress since previous meeting.

3. Field observations, problems and conflicts.
4. Problems that impede construction schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to construction schedule.
8. Progress schedule during succeeding work period.
10. Pending changes and substitutions.
11. Coordination of schedules.
12. Review submittal schedules; expedite as required.
13. Review proposed changes for:
   A. Effect on Construction Schedule and on completion date.
   B. Effect on subcontracts of the project.
14. Other business.

PART 2  PRODUCTS (Not Applicable)

PART 3  EXECUTION (Not Applicable)

END OF SECTION  01 31 19
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for non-administrative Submittals, including shop drawings, product data, samples and other miscellaneous work-related submittals. Shop drawings, product data, samples and other work-related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents.

1. Refer to other Division 1 Sections and other Contract Documents for specifications on administrative, non-work-related submittals. Such submittals include, but are not limited to the following items:
   a. Permits; Written consents; Manifests
   b. Payment applications; Performance and payment bonds; Insurance certificates.
   c. Inspection and test reports; Progress reports.
   d. Listing of subcontractors; Construction schedules.

B. SHOP DRAWINGS: Technical drawings and data that have been specially prepared for this Project, including but not limited to the following items:

1. Fabrication and installation drawings; Coordination drawings (for use on-site).
2. Schedules.
3. Design-mix formulas.

C. PRODUCT DATA: Standard printed information on manufactured products that has not been specially prepared for this Project, including but not limited to the following items:

1. Manufacturer’s product specifications and installation instructions; Catalog cuts.
2. Roughing-in diagram and templates; Standard wiring diagrams; Operational range diagrams.

D. SAMPLES: Physical examples of work, including but not limited to the following items:

1. Partial sections of manufactured or fabricated work.
2. Small cuts or containers of materials.
3. Complete units of repetitively used materials

E. MISCELLANEOUS SUBMITTALS: Work-related, non-administrative submittals that do not fit in the three previous categories, including, but not limited to the following:

1. Specially prepared and standard printed warranties; Testing and certification reports.
2. Project photographs; Record Drawings; Field measurement data.
1.02 RELATED DOCUMENTS

A. Drawings, General Provisions of the Contract and Division 1 Specification Sections apply to work of this Section.

1.03 SUBMITTAL PROCEDURES

A. GENERAL: Refer to the General Conditions for basic procedures for submittal handling.

B. COORDINATION: Coordinate the preparation and processing of submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities such as testing, purchasing, fabrication, delivery and similar activities that require sequential activity.

1. Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the Architect’s need to review a related submittal. The Architect reserves the right to withhold action on any submittal requiring coordination with other submittals until related submittals are forthcoming.

C. SCHEDULING: In each appropriate administrative submittal, such as the Progress Schedule, show the principal work-related submittals and time requirements for coordination of submittal activity with related work.

D. COORDINATION OF SUBMITTAL TIMES: Prepare and transmit each submittal to the Architect sufficiently in advance of the scheduled performance of related work and other applicable activities. Transmit different kinds of submittals for the same unit of work so that processing will not be delayed by the Architect’s need to review submittals concurrently for coordination.

E. REVIEW TIME: Allow sufficient time so that the installation will not be delayed as a result of the time required to properly process submittals, including time for re-submittal, if necessary. Advise the Architect on each submittal, as to whether processing time is critical to the progress of the work, and if the work would be expedited if processing time could be shortened.

1. Allow Fourteen (14) calendar days for the Architect’s initial processing of each submittal. Allow a longer time period where processing must be delayed for coordination with subsequent submittals. The Architect will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination.

2. Allow seven (7) calendar days for reprocessing each submittal.

3. No extension of time will be authorized because of the Contractor’s failure to transmit submittals to the Architect sufficiently in advance of the work.

F. SUBMITTAL PREPARATION: Mark each submittal with a permanent label for identification. Provide the following information on the label for proper processing and recording of action taken.

1. Project name; Date.
2. Name and address of Owner, Contractor and Supplier.
3. Name of manufacturer; Number and title of appropriate Specification Section; Drawing number and detail references, as appropriate; Similar definite information as necessary.
4. Provide a space on the label for the Contractor’s review and approval markings, and a space for the Architect’s “Action” marking.

G. SUBMITTAL TRANSMITTAL: Package each submittal appropriately for transmittal and handling. Transmit four (4) copies, plus the number of copies the Contractor wants returned to him after review of each submittal by the Architect, and to other destinations as required, by use of a transmittal form. Prepare a separate transmittal form for each division of work and identify each submittal by Specification Section number on the transmittal form. Submittals received from sources other than the Contractor will be returned to the sender “without action.”
1. Record relevant information and requests for data on the transmittal form. On the transmittal form, or on a separate sheet attached to the form, record deviations from the requirements of the Contract Documents, if any, including minor variations and limitations.

2. Submittals will be accepted by the Architect if transmitted via E-mail.

3. **No submittals will be accepted by the Architect if transmitted via FAX machine.**

4. Include the Contractor's signed certification stating that information submitted complies with requirements of the Contract Documents.

5. Sequentially number the transmittal forms; re-submittals to have original number with an alphabetic suffix.

H. CONTRACTOR’S REVIEW: Stamp of approval indicates to Owner and Architect that all quantities, dimensions, field construction criteria, materials, catalog numbers and similar data have been determined and verified, and that each submittal has been reviewed or coordinated with requirements of Work and Contract Documents. **Failure to provide the Contractor’s Review Stamp shall be grounds for the Submittal to be returned to the Contractor with no action taken.**

I. No portion of Work requiring shop drawings shall be started or any materials be fabricated, delivered to site or installed prior to approval of such items. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at Contractor's risk. Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

J. Project work, materials, fabrications and installation shall conform to approved shop drawings.

1.04 PERFORMANCE REQUIREMENTS

A. MISCELLANEOUS SUBMITTALS

1. INSPECTION AND TEST REPORTS: Classify each inspection and test report as being either “shop drawings” or “product data” depending on whether the report is specially prepared for the project, or a standard publication of workmanship control testing at the point of production. Process inspection and test reports accordingly.

2. SURVEY DATA: Provide copies of all survey data collected for property surveys, field measurements, and quantitative records of actual work, damage surveys and similar data required by the individual Sections of these specifications. None of the specified copies will be returned.

3. STANDARDS: Where submittal of a copy of standards is indicated, and except where copies of standards are specified as an integral part of a “Product Data” submittal, submit a single copy of standards for the Architect’s use. Where workmanship, whether at the project site or elsewhere, is governed by a standard, furnish additional copies of the standard to installers, Owner’s field representative and others involved in the performance of the Work.

4. CLOSEOUT SUBMITTALS: Refer to section "Closeout Procedures and Submittals" and to individual Sections of these specifications for specific submittal requirements of project closeout information, materials, tools and similar items.
   a. RECORD DOCUMENTS: Furnish set of original documents as maintained on the project site.

5. GENERAL DISTRIBUTION: Provide additional distribution of submittals to Subcontractors, suppliers, fabricators, installers, governing authorities and others as necessary for the proper performance of the Work. Include such additional copies of submittals in the transmittal to the Architect where the submittals are required to receive "Action” marking before final distribution. Record distributions on transmittal forms.

1.05 ARCHITECT’S ACTION

A. GENERAL: Except for submittals for the record and similar purposes, where action and return on submittals is required or requested, the Architect will review each submittal, mark with appropriate "Action", and where possible return within fourteen (14) calendar days of receipt. Where the submittal must be held for coordination the Architect will so advise the Contractor without delay.
B. ACTION STAMP: The Architect will stamp, sign and date each submittal copy to be returned to Contractor and indicate disposition of each submittal in accordance with the following grading requirements:

1. “Approved” or “Reviewed” indicates that Architect notes no exception to the intent of the Contract Documents. Fabrication of item may commence.
2. "Approved as Noted" or "Furnish as Corrected" indicates that Contractor may begin implementing the Work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in Operation and Maintenance data, a corrected copy shall be provided.
3. “Revise and Resubmit” indicates nonconformance with the Contract requirements or that too many corrections would be necessary. Except at its own risk, Contractor shall not undertake Work covered by this submittal until it has been revised, resubmitted, and returned marked either "Approved" or "Furnish as Corrected".
4. “Rejected” indicates nonconformance with the Contract requirements. The Architect will state the reasons for rejections.

C. ARCHITECT'S REVIEW

1. Architect’s review of submitted drawings and data will cover only general conformity to drawings and specification, external connections and dimensions which affect layout.
2. Architect’s review does not indicate thorough review of all dimensions.
3. Architect’s review of submittals does not relieve Contractor’s responsibility for errors, omissions or deviations, field verification of all dimensions nor responsibility for compliance with Contract Documents.

1.06 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by the Architect and resubmit until they are denoted “Approved”, “Reviewed”, “Approved as Noted” or “Furnish As Corrected” by the Architect. Resubmission requirements specified in individual specifications Sections, which differ from these requirements, will take precedence over these requirements.

B. SHOP DRAWINGS AND PRODUCT DATA

1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
2. Indicate any changes which have been made other than those requested by the Architect.

C. SAMPLES: Submit new samples as required for initial submittal

1.07 DISTRIBUTION

A. Distribute reproductions of shop drawings and copies of product data which carry the Architect’s stamp denoting “Approved”, “Reviewed”, “Approved as Noted” or “Furnish As Corrected” to:

1. Job site file; Record documents file.
2. Subcontractors; Supplier or fabricator.

B. Distribute samples which carry the Architect’s stamp denoting “Approved”, “Reviewed”, “Approved as noted” or “Furnish as Corrected” as directed by the Architect.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01 33 00
SECTION 01 45 00
QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Quality assurance and control of installation.
B. References.
C. Field samples.
D. Mock-up.
E. Inspection and testing laboratory services.
F. Manufacturers' field services and reports.

1.02 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures: Submission of Manufacturers' Instructions and Certificates.
B. Section 01 45 29 – Testing Laboratory Services.
C. Section 01 60 00 – Product Requirements: Requirements for material and product quality.

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions and workmanship, to produce Work of specified quality.
B. Comply fully with manufacturers' instructions, including each step in sequence.
C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship.
E. Perform work by persons qualified to produce workmanship of specified quality.
F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.04 REFERENCES

A. Conform to reference standard by date of issue current on date of Contract Documents.

C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 FIELD SAMPLES

A. Install field samples at the site as required by individual specifications Sections for review.

B. Acceptable samples represent a quality level for the Work.

C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Architect.

1.06 MOCK-UP

A. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals and finishes.

B. Where mock-up is specified in individual Sections to be removed, clear area after mock-up has been accepted by Architect.

1.07 INSPECTION AND TESTING LABORATORY SERVICES

A. The Contractor will appoint and employ services of an independent firm, acceptable to the Owner and Architect, to perform inspection and testing. Contractor shall pay for services from an Allowance specified in Section 01 21 00 – Allowances.

B. The independent firm will perform inspections, tests and other services specified in individual specification Sections and as required by the Architect.

C. Reports will be submitted by the independent firm to the Architect, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.

1. Notify Architect and independent firm 48 hours prior to expected time for operations requiring services.

2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

E. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum.

1.08 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. Submit qualifications of observer to Architect 30 days in advance of required observations. Observer subject to approval of Architect/Owner.

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

D. Submit report in duplicate within 30 days of observation to Architect for review.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTIONS (Not Applicable)

END OF SECTION 01 45 00
SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selection and payment.
B. Contractor submittals.
C. Laboratory responsibilities.
D. Laboratory reports.
E. Limits on testing laboratory authority.
F. Contractor’s responsibilities.
G. Schedule of inspections and tests.

1.02 RELATED SECTIONS

A. Document 00 72 00 - General Conditions: Inspections, testing and approvals required by public authorities.
B. Section 01 33 00 – Submittal Procedures: Manufacturer’s certificates.
C. Section 01 75 00 - Starting and Adjusting.
D. Section 01 78 00 – Closeout Procedures and Submittals: Project Record Documents.
E. Individual Specification Sections: Inspections and tests required and standards for testing.

1.03 REFERENCES

B. ANSI/ASTM E329 - Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as Used in Construction.

1.04 SELECTION AND PAYMENT

A. Contractor will employ services of an independent testing laboratory, acceptable to the Owner and Architect, to perform specified inspection and testing.
Aharonian & Associates, Inc. – Architects
Captain Isaac Paine Elementary School – Bathroom Renovations Foster, Rhode Island

B. Contractor shall pay costs of services from an allowance specified in Section 01 21 00 – Allowances on approval of invoices by Architect.

C. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.05 QUALITY ASSURANCE

A. Comply with requirements of ANSI/ASTM E329 and ANSI/ASTM D3740.

B. LABORATORY: Authorized to operate in State in which Project is located.

C. LABORATORY STAFF: Maintain a full time registered Engineer on staff to review services.

D. TESTING EQUIPMENT: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards (NBS) Standards or accepted values of natural physical constants.

1.06 CONTRACTOR’S SUBMITTALS

A. Prior to start of Work, submit testing laboratory name, address and telephone number, and names of full time registered Engineer and responsible officer.

B. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards (NBS) during most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.07 LABORATORY RESPONSIBILITIES

A. Test samples of mixes submitted by Contractor.

B. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.

C. Perform specified inspection, sampling and testing of products in accordance with specified standards.

D. Ascertain compliance of materials and mixes with requirements of Contract Documents.

E. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or products.

F. Perform additional inspections and tests required by Architect.

G. Attend pre-construction conferences and progress meetings.

1.08 LABORATORY REPORTS

A. After each inspection and test, promptly submit two copies of laboratory report to Architect and to Contractor.

B. INCLUDE:

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 tests.

9. Results of tests.


C. When requested by Architect/Engineer, provide interpretation of test results.

1.09 LIMITS ON TESTING LABORATORY AUTHORITY

A. Laboratory may not release, revoke, alter or enlarge on requirements of Contract Documents.

B. Laboratory may not approve or accept any portion of the Work.

C. Laboratory may not assume any duties of Contractor.

D. Laboratory has no authority to stop the Work.

1.10 CONTRACTOR’S RESPONSIBILITIES

A. Deliver to laboratory, at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.

B. Cooperate with laboratory personnel and provide access to the Work.

C. Provide incidental labor and facilities to provide access to Work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.

D. Notify Architect/Engineer and laboratory 24 hours prior to expected time for operations requiring inspection and testing services.

E. Arrange with laboratory and pay for additional samples and tests required by Contractor beyond specified requirements.

1.11 SCHEDULE OF INSPECTIONS AND TESTS

A. See individual specification Section for inspection and testing requirements.
SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mobilization and demobilization.

B. Temporary Utilities.

C. Construction facilities.

D. Vehicular access and parking.

E. Temporary barriers and enclosures.

F. Protection of Work.

G. Temporary controls.

H. Project identification.

1.02 RELATED SECTIONS

A. Drawings, General Provisions of the Contract and Division 1 Sections apply to work of this Section.

1.03 GENERAL

A. The limits of the site are shown on the Drawings. Areas designated for Contractor staging shall be coordinated with the Owner in the field.

B. The limits of the Owner’s property are shown on the Drawings.

C. In the event additional space is required for the Contractor’s operations, the Contractor shall make its own arrangements and pay for such additional space.

1.04 PRIVATE LAND

A. The Contractor shall not enter or occupy private land outside of easements, except by written permission of the property Owner. Furnish Architect with copies of all agreements the Contractor has with property Owners to enter or occupy private lands.

1.05 PERMITS AND TEMPORARY FACILITIES

A. The Contractor shall obtain necessary permits, coordinate and provide all temporary facilities as required for performing the work, including any facilities specified for the Owner’s or the Architect’s use.
1.06 CONTROL OF TEMPORARY FACILITIES

A. All temporary facilities shall be subject to the control and direction of the Owner.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

3.01 MOBILIZATION

A. Provide all work necessary to move in personnel and equipment, set up Contractor's temporary offices, buildings, facilities, utilities, prepare the site for construction.

B. Set up construction facilities in a neat and orderly manner within the Contractor’s staging area and at a location acceptable to the Architect. Accomplish all required work in accordance with applicable portions of these Specifications. Confine operations within the general work limits shown or established.

3.02 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS

A. Completely remove temporary above grade or buried utilities, equipment, facilities, materials and equipment prior to Substantial completion or when their use is no longer required.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Temporary sheds, utilities, barricades, signs and other appurtenances related to prosecution of the Work and not incorporated in the permanent construction shall be completely removed from the site prior to acceptance of work by Owner.

D. Upon completion of work of all trades and before final acceptance of entire Project, each trade shall remove, at its own expense, all wiring, appurtenances and accessories used in performance of its respective work.

E. Clean and repair damage caused by installation or use of temporary work.

F. Restore permanent facilities used during construction to specified condition.

3.03 DEMOBILIZATION

A. At the completion of the work and immediately prior to final inspection, clean the entire project area removing all debris, soil and rubbish.

1. Should Contractor not remove rubbish or debris or not clean the facilities and site as specified above, the Owner reserves the right to have final cleaning done by others at the sole expense of the Contractor.

B. The Contractor shall:

1. Employ experienced workers or professional cleaners for final cleaning.


3. Remove from the property temporary structures and materials, equipment and appurtenances not required as part of, or appurtenant to, the completed work.

4. Leave watercourse, gutters and ditches open and in condition satisfactory to Architect.
3.04 TEMPORARY UTILITIES

A. The Contractor shall coordinate for and obtain the necessary permits for connection to these services.

3.05 TEMPORARY HEATING AND VENTILATION

A. Provide temporary heating when temperature falls below 50 deg. F and as otherwise required to:
   1. Maintain working conditions acceptable to Architect.
   2. Protect all work, materials and equipment against damage from dampness or cold.
   3. Dry out structures. Maintain proper conditions for installation and curing of materials.

B. Ensure that heating equipment and fuels are compatible for particular purpose and include safety devices in accordance with industry standards.

C. Do not use combustion type heaters without proper venting nor in areas where such equipment might introduce a hazard.

D. Ensure that all enclosed areas are ventilated (using forced-draft equipment when necessary) as required to maintain proper conditions for personnel, and work, and to avoid any accumulation of hazardous dust or fumes.

E. Pay costs associated with furnishing, installing, maintaining, operating and removing of heating and ventilation equipment.

3.06 TEMPORARY WATER

A. Owner will provide water supply as required for used in connection with Work to be done under this Contract.

B. The Contractor shall pay for the cost of the water usage.

3.07 TEMPORARY ELECTRICITY AND/OR LIGHTING

A. Arrange with utility company and Owner to provide all power for heating, lighting, operation of equipment or for any other required use. Pay costs for service and for power used.

B. Install circuit and branch wiring, with area distribution boxes located so that power and lighting is available throughout construction by use of construction-type power cords.

C. Provide artificial lighting for areas of work when natural light is not adequate for work, and for areas accessible to public.

D. Furnish all extension cords, sockets, lamps, motors and accessories for work. Ground all outlets.

E. All temporary wiring, service equipment and accessories thereto installed shall be removed at expense of Contractor after serving its purpose.

F. Contractor is required to pay for replacement of all lamps broken and/or removed from premises during construction period and until date of Substantial Completion of Work and written acceptance by Owner.

3.08 TELEPHONE SERVICE

A. Provide, maintain and pay for telephone service to field office at time of project mobilization.
3.09 INTERFERENCE WITH EXISTING STRUCTURES

A. Whenever it may be necessary to cross or interfere with existing culverts, drains, water pipes or fixtures, guardrails, fences, or other structures needing special care, due notice shall be given to the Architect and to the various public and private agencies or individuals responsible for the utility or structure that is interfered with.

B. Whenever required, all objects shall be strengthened to meet any additional stress that the work herein specified may impose upon it, and any damage caused shall be thoroughly repaired.

C. The entire Work shall be the responsibility of the Contractor and the Work shall be performed at no additional expense to the Owner.

D. All damaged items of Work or items required to be removed and replaced due to construction shall be replaced or repaired by the Contractor to the complete satisfaction of the property Owners and/or the Architect at no additional expense to the Owner.

3.10 FIELD OFFICES AND SHEDS

A. OFFICE: Weather-tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 8 persons.

C. Provide separate private office, similarly equipped and furnished, for use of Owner. This office may be located in a job trailer, shared with the Contractor.

D. Coordinate locations of offices and sheds with the Owner and Architect.

E. Contractor’s project signage shall be subject to the direction and control of the Owner.

3.11 TEMPORARY SANITARY FACILITIES

A. Furnish temporary sanitary facilities at site for needs of all construction workers and others performing work or furnishing services on project.

B. Ensure that sanitary facilities are:

1. Of a capacity acceptable to Architect and authorities having jurisdiction over the Project.

2. Maintained throughout construction period.

3. Obscured from public view to greatest extent possible and secured to prevent vandalism.

C. Furnish at least one toilet for each 20 workers if toilets of chemically treated type are used.

D. Service, clean and maintain facilities and enclosures.

E. Enforce use of such sanitary facilities by all personnel at site.

F. Pay costs associated with furnishing, installing, maintaining, operating and removing sanitary facilities.

3.12 VEHICULAR ACCESS

A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.
B. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.

3.13 PARKING

A. Provide parking facilities for Contractor, Owner and Architect personnel working on the project.

B. Arrange for and provide temporary parking areas to accommodate construction personnel as required.

C. When site space is not adequate, provide additional off-site parking as required.

3.14 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather-tight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification Sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

B. Provide temporary roofing as required.

3.15 INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings as required to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas and to prevent damage to existing materials and equipment.

B. CONSTRUCTION: Framing, plywood and gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces; insulated to R-13, STC rating of 35 in accordance with ASTM E90 and maximum Flame Spread Rating of 75 in accordance with ASTM E84.

C. Paint surfaces exposed to view from Owner occupied areas.

3.16 BARRICADES

A. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

B. Provide protection for plant life designated to remain. Replace damaged plant life.

C. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

3.17 FENCING

A. Construct temporary fence as required for the protection of the Contractor's materials, tools and equipment. Maintain fence during construction.

B. CONSTRUCTION: Commercial grade chain link fence, six feet in height.

C. Provide 6-foot high vehicular and gates with locks at access roads into site.

3.18 SECURITY BARRIERS

A. Provide security barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. The Contractor shall take all precautions necessary to prevent loss or damage caused by vandalism, theft, burglary, pilferage or unexplained disappearance of property of the Owner or Contractor, whether
or not forming part of the Work, located within the limits of Work. The Contractor shall have full responsibility for the security of such property located in such areas and shall reimburse the Owner for any such loss, damage or injury, except such as may be directly caused by agents or employees of the Owner.

C. Coordinate with Owner's security program.

3.19 PUBLIC SAFETY

A. At all times until final acceptance of Work by Owner, the Contractor shall protect Work and shall take all precautions of preventing injuries to persons or damage to property on or about site.

B. Contractor shall comply with all applicable laws, ordinances, rules and regulations regarding safety of persons or property or with regard to protecting them from damage, injury or loss and shall not load or permit any part of Work to be placed so as to endanger safety of Work.

C. If Contractor constructs temporary bridges or provides temporary crossing of streams, Contractor's responsibility for accidents shall include roadway and sidewalk approaches as well as structure of such crossings.

D. Conduct work such that abutters shall have reasonable access to their property. Contractor shall be responsible for providing such reasonable safe means of access to public way as Architect deems essential. When it is necessary to leave materials and equipment upon highway or city or town way, place them so as to cause least possible obstruction to drainage, pedestrian and other travel.

3.20 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Architect.

B. All sidewalks which are disturbed by the Contractor's operations shall be restored to their original condition by the use of similar or comparable materials. All curbing shall be restored in a condition equal to the original construction and in accordance with the best modern practice.

C. Along the location of this Work, all fences, walks, bushes, trees, shrubbery and other physical features shall be protected and restored in a thoroughly workmanlike manner. All grass areas beyond the limits of construction which have been damaged by the Contractor shall be regraded and seeded, subject to the approval of the Architect.

D. Trees close to the work shall be boxed or otherwise protected against injury. The Contractor shall trim all branches that are likely to be damaged because of his operations, but in no case shall any tree be cut or removed without prior notification of the Architect. All injuries to bark, trunk, limbs and roots of trees shall be repaired by dressing, cutting and painting according to approved methods, using only approved tools and materials, subject to the approval of the Owner.

E. The protection, removal and replacement of existing physical features along the line of Work shall be a part of the Work under the Contract, and all costs in connection therewith shall be included in the unit and/or lump sum prices established under the items in the proposal.

3.21 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. The Contractor shall assume full responsibility for the protection of all buildings, structures and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, electric and telephone cables and cesspools adjacent to trench
excavations, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense, to the damaged items original condition.

B. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water, gas, electric and telephone services, drain lines and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.

C. Protection and temporary removal and replacement of existing utilities and structures as described in this section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the unit prices established in the proposal.

3.22 PROTECTION OF WORK

A. The Contractor shall at all times protect excavations, trenches, new construction, old construction, all job materials, apparatus and fixtures from rain, wind, snow, ice, dust, dirt, mud, groundwater, back-up or leakage of sewers, drains or other piping, and from water of any other origin, and shall remove promptly any accumulation of the above. He shall provide and operate all pumps, piping and other equipment necessary to this end at no additional cost to Owner.

B. Thoroughly protect all completed work and all stored materials.

C. Provide boards, cloths, planks, waterproof paper, canvas or other approved protection and use as necessary to prevent any damage.

D. Provide protective measures to prevent damage to lawns, trees and shrubs to remain after Project is complete.

E. Protect, at end of each day's work, such Work that may be liable to damage by the elements.

F. Replace or rectify work or materials damaged by workmen, by the elements or by any other cause, to the satisfaction of the Architect and at no additional expense to the Owner.

G. Repair streets, curbs, sidewalks, poles, grass, shrubs, trees or other existing site features, if disturbed by building operations. Leave them in as good condition as they were before being disturbed.

H. Do not allow workmen, including those of any Subcontractor or supplier, to mark finish surfaces with marking pens or other such devices that are not readily erasable.

I. Protect installed Work and provide special protection where specified in individual specification Sections.

J. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.

K. Provide protective coverings at walls, projections, jambs, sills and soffits of openings.

L. Protect finished floors, stairs and other surfaces from traffic, dirt, wear, damage or movement of heavy objects by protecting with durable sheet materials.

M. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

N. Prohibit traffic from landscaped areas.
3.23 OPEN EXCAVATIONS

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property.

B. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required.

C. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Architect and/or the local authorities having jurisdiction over the Project.

D. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Architect and/or the local authority may require special construction procedures such as limiting the length of open trench, prohibiting stacking excavated material in the street, and requiring that the trench shall not remain open overnight.

E. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment or other obstacles which could be dangerous to the public shall be well lighted at night.

3.24 LENGTH OF TRENCH TO BE OPENED, MAINTAINING PREMISES FREE FROM OBSTRUCTIONS, CROSSES, DIRECTIONAL SIGNS AND LIGHTS

A. The length of trench opened at any time, from the point where ground is being broken to completed backfill and also the amount of space in streets or public and private lands occupied by equipment, trench and supplies, shall not exceed the length or space considered reasonably necessary for installation of Work.

B. In determining the length of open trench or spaces for equipment, materials, supplies and other necessities, the Contractor will consider the nature of the lands or streets where work is being done, types and methods of construction and equipment being used, inconvenience to the public or to private parties, possible dangers and other proper matters.

C. All Work must be constructed with a minimum of inconvenience and danger to the public and all other parties concerned. Trench excavations shall be completely backfilled at the end of each day, or covered with steel traffic plates, as directed by the Architect and/or as required by authorities having jurisdiction over the Project.

D. Whenever any trench obstructs pedestrian and vehicular traffic in or to any public street, private driveway or property entrance, or on private driveway or property entrance, or on private property, the Contractor shall take such means as may be necessary to maintain pedestrian and vehicular traffic and access.

E. Until such time as the Work may have attained sufficient strength to support backfill, or if for any other reason it is not expedient to backfill the trench immediately, the Contractor shall construct and maintain suitable plank crossings and bridges to carry essential traffic in or to the street, driveway or property in question as specified or directed.

F. Suitable signs, lights and such required items to direct traffic shall be furnished and maintained by the Contractor.

G. The Contractor must keep streets and premises free from unnecessary obstructions, debris and all other materials.
H. The Architect or local authority may, at any time, order all equipment, materials, surplus from excavations, debris and all other materials lying outside that length of working space promptly removed, and should the Contractor fail to remove such material within 24 hours after notice to remove the same, the Architect or local authority may cause any part or all of such materials to be removed by such persons as he may employ, at the Contractor's expense, and may deduct the cost thereof from payment which may be or may become due to the Contractor under the Contract. In special cases, where public safety urgently demands it, the Architect or local authority may cause such materials to be removed without prior notice.

3.25 EROSION AND SEDIMENT CONTROL

A. GRADE SITE TO DRAIN. Maintain excavations free of water. Provide, operate and maintain pumping equipment.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion and accumulation of sediment in utility structures or other similar undesirable locations.

3.26 REMOVAL OF WATER AND PROTECTION FROM FLOODING

A. The Contractor shall construct and maintain, at no additional expense to the Owner, all pumps, drains, well points or any other facility for the control and collection of groundwater and/or surface water and provide all pumps and piping for the removal of water from the trenches and excavations so that all trenches and excavations may be kept free from water at all times and so that all construction work may be performed in the dry.

B. Any damage resulting from the failure of the dewatering operations of the Contractor and any damage resulting from the failure of the Contractor to maintain the areas of all work in a suitable dry condition shall be repaired by the Contractor as directed by the Architect at no additional expense to the Owner.

C. The Contractor's pumping and dewatering operations shall be carried out in accordance with RIDEM regulations and in such a manner as to prevent damage to existing structures and utilities and the contract Work and so that no loss of ground will result from these operations.

D. Precautions shall be taken to protect existing and new Work from flooding during storms or from other causes. Pumping shall be continuous where directed by the Architect to protect the Work and/or to maintain satisfactory progress.

E. All pipelines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected.

F. Water from the trenches, excavations and drainage operations shall be disposed of downstream of the water course in such a manner as will neither cause public nuisance, nor cause injury to public health nor to public or private property nor to the Work completed nor to the Work in progress.

G. No extra payment will be made for the removal of water, protection from flooding, drainage work, diversion of existing water courses and such other work, but compensation therefore shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid.

H. The Contractor shall, at his own cost, maintain the flow of water courses during the progress of the work.

3.27 SURFACE AND STORM WATER CONTROL

A. Provide for drainage of storm water and such water as may be applied or discharged on site in performance of Work.

B. Ensure that drainage facilities are adequate to prevent damage to Work, site and adjacent property.
1. Clean, enlarge or supplement existing drainage channels to carry all increased runoff attributable to operation.

2. Construct dikes to:
   a. Divert increased runoff from entering adjacent property (except in natural channels).
   b. Protect the Work.
   c. Direct water to drainage channels or conduits.

3.28 DUST CONTROL

A. At no additional cost to the Owner, take measures to prevent unnecessary dust.
   1. Keep earth surfaces subject to dusting moist with water only.
   2. Cover dusty materials in piles or in transit to prevent blowing.

B. Protect buildings or operating facilities that may be affected adversely by dust.

C. Protect existing or new machinery, motors, instrument panels or similar equipment with dust screens. Include proper ventilation with dust screens.

3.29 NOISE CONTROL

A. The Contractor shall employ all reasonable measures to avoid unnecessary noise and ensure that noise is appropriate for normal ambient sound levels in the work area during working hours. Where required by agencies having jurisdiction, certain noise-producing work may have to be performed during specified periods only. Noise control measures during normal work hours shall include but not be limited to:
   1. Operate machinery in a manner to cause least noise consistent with efficient performance of work.
   2. Equip all construction machinery and vehicles with sound-muffling devices.
   3. During construction adjacent to or near occupied buildings, erect screens or barriers to reduce noise in building to limits in accordance with applicable codes. Conduct operations in such a manner as to avoid unnecessary noise which might interfere with activities of building occupants.

B. When the Contractor’s work extends beyond normal working hours, the Contractor shall incorporate to the complete satisfaction of the Owner and Architect, adequate noise prevention measures to insure minimum noise impact on the surrounding areas. Noise prevention measures shall include, but not be limited to:
   1. Insulated enclosures.
   2. Hospital grade silencers or mufflers.
   3. Equipment modification.
   4. Special equipment, as necessary to meet Town noise guidelines.
   5. Any other noise prevention measures.

C. Should at any time the Owner and/or Architect determine that noise prevention measures are inadequate, the Contractor shall suspend all such work in question until acceptable measures are
incorporated. Suspension of work due to inadequate noise prevention shall not be a cause for additional cost to the Owner.

D. Prior to the start of any Work outside normal work hours, the Contractor shall submit a Noise Control plan to the Owner and Architect for review. Noise Control plans shall be submitted for:

1. Night work.

2. All Pumping operations and work that may extend beyond normal work day.

3. Any other work as determined by the Architect that warrants special noise prevention measures.

E. All costs associated with noise control measures shall be considered part of the bid price for appropriate work being completed.

3.30 POLLUTION CONTROL

A. Prevent pollution of drains and watercourses by sanitary wastes, sediment, debris and other substances resulting from construction activities.

1. Do not allow sanitary wastes to enter any drain or watercourse other than sanitary sewers.

B. Do not allow sediment, debris or other substance to enter sanitary sewers and take measures to prevent such materials from entering any drain or watercourse.

C. All earthwork, grading, moving of equipment, water control and other operations likely to create silting, shall be planned and conducted so as to avoid pollution of any water courses. Water used for any purpose that has become contaminated with oil, bitumen, salt or other pollutions shall be discharged so as to avoid affecting nearby waters. Under no circumstances shall pollutants be discharged directly into any water courses.

D. All concrete repair work requiring cleaning and removal of debris is to be contained as not to contaminate the surrounding environment.

3.31 PROJECT IDENTIFICATION

A. Provide 8 foot wide x 6 foot high project sign of exterior grade plywood and wood frame construction, painted, with exhibit lettering by professional sign maker, to Architect's design and colors.

B. List title of Project, names of Owner, Architect, professional sub-consultants and Contractor.

C. Erect on site at location established by Owner and/or Architect.

D. No other signs are allowed without Owner permission except those required by law.

END OF SECTION 01 50 00
SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1  GENERAL

1.01  SECTION INCLUDES

A.  Products, materials and equipment.
B.  Transportation and handling.
C.  Storage and protection.
D.  Product options.
E.  Substitutions.

1.02  RELATED SECTIONS

A.  Document 00 21 13 - Instructions to Bidders: Product options and substitution procedures.
B.  Document 00 22 13 – Supplementary Instructions to Bidders.
C.  Section 01 45 00 - Quality Control: Product quality monitoring.

1.03  MANUFACTURED AND FABRICATED PRODUCTS

A.  Design, fabricate and assemble in accordance with the best engineering and shop practices.
B.  Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
C.  Two or more items of the same kind shall be identical, by the same manufacturer.
D.  Products shall be suitable for service conditions.
E.  Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically reviewed by Architect.
F.  Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.04  MATERIAL AND EQUIPMENT INCORPORATED INTO THE WORK

A.  Conform to applicable specifications and standards.
B.  Comply with size, make, type and quality specified or as specifically reviewed by the Architect.
1.05 MANUFACTURER'S INSTRUCTIONS

A. When the Contract Documents require that installation of Work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, as specified in Section 01 33 00 – Submittal Procedures.

B. Maintain one set of complete instructions at the job site during installation and until completion.

C. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.

D. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Architect for further instructions.

E. Do not proceed with Work without clear instructions.

F. Perform Work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by the Contract Documents.

1.06 CERTIFICATES OF CONFORMANCE AND MANUFACTURE

A. In addition to other requirements specified herein, the Contractor shall furnish to the Architect, as specified in Section 01 33 00 - Submittals, notarized certificates of conformance and manufacture that all materials and/or equipment to be furnished under this Contract meet the specification requirements. When directed, each shipment of material shall be accompanied by the manufacturer's notarized certificates of conformance and manufacture. Unless otherwise specifically specified, all testing of materials shall be provided by the Contractor at no additional expense to the Owner.

B. Each manufacturer's certificate shall be endorsed or accompanied by the Contractor's certificate that the material certified by the manufacturer will be the material incorporated in the Work.

1.07 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with Work and conditions at the site and also when two or more trades, contractors or suppliers are involved.

B. Transport all materials and equipment on legally approved conveyances as required or recommended by the respective manufacturer or supplier.

C. Deliver products in undamaged condition, in manufacturer's original containers or packaging with identifying labels intact and legible.

D. Receive and handle all materials and equipment, at the Project site, by conveyances or methods as recommended by the respective manufacturer or supplier to prevent damage to products.

E. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and reviewed submittals, and that products are properly protected and undamaged.

F. Remove from the site any material or item of equipment damaged during the transportation or handling process, and immediately replace at no additional cost to the Owner.

1.08 STORAGE AND PROTECTION

A. Store products in accordance with the manufacturer's instructions, with seals and labels intact and legible.

B. Store products subject to damage by the elements in weathertight enclosures.
C. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

D. Maintain all storage areas in a clean and orderly condition at all times.

1.09 EXTERIOR STORAGE

A. Store fabricated products above the ground, on blocking or skids. Prevent soiling or staining. Cover products that are subject to deterioration with impervious sheet coverings and provide adequate ventilation to avoid condensation.

B. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions and are free from damage or deterioration.

D. Replace any material or item of equipment damaged due to inadequate storage or protection and immediately replace at no additional cost to the Owner.

1.10 PROTECTION AFTER INSTALLATION

A. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

1.11 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 manufacturers named and meeting 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.

1.12 SUBSTITUTIONS

A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this Section.

B. Thereafter, Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A REQUEST CONSTITUTES A REPRESENTATION THAT THE CONTRACTOR:

1. Has investigated 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 installation and make changes to other Work that may be required for the Work to be complete, with no additional cost to Owner.

4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.

E. **Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.**

F. **SUBSTITUTION SUBMITTAL PROCEDURE**

1. Submit four copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

2. Submit shop drawings, product data and certified test results attesting to the proposed product equivalence.

3. The Architect will notify the Contractor, in writing, of decision to accept or reject request.

<table>
<thead>
<tr>
<th>PART 2</th>
<th>PRODUCTS (Not Applicable)</th>
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<td>PART 3</td>
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END OF SECTION 01 60 00
SECTION 01 73 29
CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for cutting and patching.

1.02 RELATED SECTIONS

A. Section 01 31 13 – Project Coordination: Procedures for coordinating cutting and patching with other construction activities.

B. Section 02 41 13 - Selective Demolition: Demolition of selected portions of the building for alterations.

C. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.03 SUBMITTALS

A. CUTTING AND PATCHING PROPOSAL: Submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Owner requires approval of these procedures before proceeding. Request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.

2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.

3. List products to be used and firms or entities that will perform Work.

4. Indicate dates when cutting and patching will be performed.

5. UTILITIES: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.

7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.
1.04 QUALITY ASSURANCE

A. REQUIREMENTS FOR STRUCTURAL WORK: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
   a. Foundation construction; Bearing and retaining walls.
   b. Structural concrete; Structural steel and structural decking; Lintels; Miscellaneous structural metals.
   c. Stair systems.
   d. Exterior wall construction.
   e. Equipment supports; Piping, ductwork, vessels and equipment.

B. OPERATIONAL LIMITATIONS: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
   a. Primary operational systems and equipment.
   b. Air or smoke barriers; Water, moisture or vapor barriers.
   c. Membranes and flashings.
   d. Fire protection systems.
   e. Noise and vibration control elements and systems.
   f. Electrical wiring systems; Control systems; Communication systems.

C. VISUAL REQUIREMENTS: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

1. If possible, retain the original Installer or fabricator to cut and patch the exposed Work. If it is impossible to engage the original Installer or fabricator, engage another recognized experienced and specialized firm.

1.05 WARRANTY

A. EXISTING WARRANTIES: Replace, patch and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 PRODUCTS

2.01 MATERIALS - GENERAL

A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible, if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
1. Before proceeding, meet at the Project Site with parties involved in cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 PREPARATION

A. TEMPORARY SUPPORT: Provide temporary support of work to be cut.

B. PROTECTION: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Avoid cutting existing utilities serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 PERFORMANCE

A. GENERAL: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. CUTTING: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.

1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill.

4. Comply with requirements of applicable Division 31 Sections where cutting and patching requires excavating and backfilling.

5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. PATCHING: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and
appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.

4. Patch, repair or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.04 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 01 73 29
SECTION 01 74 00
CLEANING AND WASTE MANAGEMENT

PART 1  GENERAL

1.01  SECTION INCLUDES

A.  Provide all necessary material, labor and equipment to maintain the job site free of debris and waste material during construction and to perform final cleaning.

1.02  RELATED SECTIONS

A.  Section 01 78 00 – Closeout Procedures and Submittals.

B.  Cleaning and protection requirements as described in other Sections of this Project Manual.

1.03  REQUIREMENTS OF REGULATORY AGENCIES

A.  SAFETY STANDARDS:  Maintain project in accordance with the following safety and insurance standards: Federal Occupational Safety and Health Act of 1970.

B.  FIRE PROTECTION:  Store volatile waste in covered metal containers and remove from premises daily.

C.  POLLUTION CONTROL:  Conduct clean-up and disposal operations to comply with local ordinances and anti-pollution laws.

   1.  Burning or burying of rubbish and waste materials on the Project site is not permitted.

   2.  Disposal of volatile fluid waste (such as mineral spirits, oil or paint thinner) in storm sanitary sewer systems or into streams or waterways is not permitted.

PART 2  PRODUCTS

2.01  CLEANING MATERIALS

A.  Use only cleaning materials recommended by manufacturer of surface to be cleaned.

B.  Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3  EXECUTION

3.01  DURING CONSTRUCTION

A.  Oversee cleaning and insure that buildings and grounds are maintained free from accumulations of waste material and rubbish.
B. Do not allow waste materials, rubbish and debris to accumulate and become an unsightly or hazardous condition. At reasonable intervals or as directed by the Architect during the progress of work, clean up site and access and dispose of waste materials, rubbish and debris from the site and legally dispose of at public or private dumping areas off the Owner's property.

C. Immediately after unpacking, remove and dispose of all packing materials, case lumber, excelsior, wrapping or other rubbish from site.

D. Remove all wastes from site and dispose in a manner complying with local ordinances and antipollution laws.

E. Store volatile wastes in covered metal containers and remove daily.

F. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for acceptance or occupancy.

G. Lower waste materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.

H. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet newly painted surfaces.

I. Provide trash receptacles about site and empty containers daily.

J. Neatly stack construction materials, such as concrete forms and scaffolding, when not in use.

K. Promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids and cleaning solution from surfaces to prevent marring or other damage to satisfaction of Architect.

L. Sprinkle dusty debris with water and calcium chloride as needed.

M. Ensure that wastes are not buried or burned on site or disposed into storm drains, sanitary sewers, steams or waterways.

N. Cleanup as determined by Architect will be a condition for recommendation of progress payment application.

1. Contractor shall have full responsibility for cleaning up during and immediately upon completion of work. Remove all rubbish, waste, tools, equipment and appurtenances caused by and used in execution of work, leaving site clean, free of debris and in condition acceptable to Architect.

2. Equipment or material shall not be left within any work area after acceptance of Contract without written permission of Architect. Do not abandon any material at or near site regardless of its value.

3.02 FINAL CLEANING

A. Use experienced workmen or professional cleaners for final cleaning.

B. At completion of construction and just prior to acceptance or occupancy, conduct a final inspection of exposed exterior and interior surfaces.

C. Execute final cleaning prior to final inspection.

D. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from interior and exterior surfaces.

E. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum resilient, carpeted and soft surfaces.
F. Repair, patch and touch-up marred surfaces to match adjacent surfaces.

G. Clean equipment and fixtures to a sanitary condition.

H. Replace filters of operating equipment.

I. Replace air conditioning filters if units were operated during construction.

J. Clean ducts, blowers and coils if air conditioning units were operated without filters during construction.

K. Clean debris from roofs, gutters, downspouts and drainage systems.

L. Broom clean paved surfaces; rake clean other surfaces of grounds.

M. Remove waste and surplus materials, rubbish and construction facilities from the site.

N. Maintain cleaning until the building or portion is accepted by the Owner.

END OF SECTION 01 74 00
SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

PART 1  GENERAL

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

1.2 SUMMARY
A. Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Recycling nonhazardous demolition and construction waste.
   3. Disposing of nonhazardous demolition and construction waste.
B. Related Requirements:
   1. Section 02 41 13 “Selective Demolition” for disposal of waste resulting from partial demolition of building materials.

1.3 DEFINITIONS
A. CONSTRUCTION WASTE: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
B. DEMOLITION WASTE: Building materials resulting from selective demolition operations.
C. DISPOSAL: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
D. RECYCLE: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
E. SALVAGE: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

1.4 PERFORMANCE REQUIREMENTS
A. GENERAL: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:
1. Construction Waste:
   a. Masonry.
   b. Lumber.
   c. Wood sheet materials.
   d. Wood trim.
   e. Metals.
   f. Roofing.
   g. Insulation.
   h. Piping.
   i. Electrical conduit.
   j. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
      1) Paper.
      2) Cardboard.
      3) Boxes.
      4) Plastic sheet and film.
      5) Polystyrene packaging.
      7) Plastic pails.

1.5 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 7 days of date established for the Notice of Award.

1.6 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons (tonnes).
   4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
   5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
   6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. LEED Submittal: LEED letter template for Credit MR 2, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.

H. Qualification Data: For waste management coordinator and refrigerant recovery technician.

I. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements, that employs a LEED-Accredited Professional, certified by the USGBC, as waste management coordinator.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

   1. Review and discuss waste.
   2. Review requirements for documenting quantities of each type of waste and its disposition.
   3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
   4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.


C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Form CWM-3 for construction waste and Form CWM-4 for site preparation waste. Include points of waste generation, total quantity of
each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
2. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
4. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
5. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Use Form CWM-5 for construction waste and Form CWM-6 for site preparation waste. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Division 01 Section “Temporary Facilities and Controls.”

B. Waste Management Coordinator: This can be the contractor’s project manager, superintendent or other qualified individual acceptable to the Engineer. Waste management coordinator shall be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE
   A. Salvaged Items for Sale and Donation: Not permitted on Project site.

3.3 RECYCLING WASTE, GENERAL
   A. General: Recycle paper and beverage containers used by on-site workers.
   B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.
   C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
   D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
      1. Contractor’s Option: As this construction site is very limited in area the use of a co-mingled collection system with off site separation is acceptable.
      2. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
         a. Inspect containers and bins for contamination and remove contaminated materials if found.
      3. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
      4. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
      5. Store components off the ground and protect from the weather.
      6. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING CONSTRUCTION WASTE
   A. Packaging:
      1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:
   1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
   2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

D. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

3.5 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

3.6 ATTACHMENTS

A. Form CWM-1 for construction waste identification.
B. Form CWM-2 for demolition waste identification.
C. Form CWM-3 for construction waste reduction work plan.
D. Form CWM-4 for demolition waste reduction work plan.
E. Form CWM-5 cost/revenue analysis of construction waste reduction work plan.
F. Form CWM-6 cost/revenue analysis of demolition waste reduction work plan.
G. Form CWM-7 for construction waste
H. Form CWM-8 for demolition waste.

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<th>MATERIAL CATEGORY</th>
<th>GENERATION POINT</th>
<th>EST. QUANTITY OF MATERIALS RECEIVED* (A)</th>
<th>EST. WASTE - % (B)</th>
<th>TOTAL EST. QUANTITY OF WASTE* (C = A x B)</th>
<th>EST. VOLUME CY (CM)</th>
<th>EST. WEIGHT TONS (TONNES)</th>
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## FORM CWM-4: DEMOLITION WASTE REDUCTION WORK PLAN

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### FORM CWM-6: COST/REVENUE ANALYSIS OF DEMOLITION WASTE REDUCTION WORK PLAN

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Miscellaneous Metals
Structural Steel
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Mech. Equipment
Electrical Conduit
Copper Wiring
Light Fixtures
Lamps
Lighting Ballasts
Electrical Devices
Switchgear and Panelboards
Transformers
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SECTION 01 75 00
STARTING AND ADJUSTING

PART 1  GENERAL

1.01  SECTION INCLUDES

A. Starting systems.
B. Demonstration and instructions.
C. Testing, adjusting and balancing.

1.02  RELATED SECTIONS

A. Section 01 45 00 - Quality Control: Manufacturers field reports.
B. Section 01 78 00 – Closeout Procedures and Submittals: System operation and maintenance data and extra materials.
C. Division 23 Sections pertaining to HVAC systems.
D. Division 26 Sections pertaining to Electrical systems.

1.03  STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.
B. Notify Architect and Owner seven days prior to start-up of each item.
C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence 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 start-up under supervision of responsible Contractors' personnel in accordance with manufacturers' instructions.
G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up and to supervise placing equipment or system in operation.
H. Submit a written report in accordance with Section 01 45 00 that equipment or system has been properly installed and is functioning correctly.
1.04 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.

B. Demonstrate Project equipment, instructed by qualified Contractor’s representative who is knowledgeable about the Project.

C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.

E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance and shutdown of each item of equipment at agreed-upon times, at equipment location.

F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

G. The amount of time required for instruction on each item of equipment and system is that specified in individual Sections.

1.05 TESTING, ADJUSTING AND BALANCING

A. Contractor will appoint and employ services of an independent firm, acceptable to the Owner and Architect, to perform testing, adjusting and balancing. Contractor shall pay for services specified in Section 01 21 00 Allowances.

B. The independent firm will perform services specified in Division 23 Sections.

C. Reports will be submitted by the independent firm to the Architect indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01 75 00
SECTION 01 78 00
CLOSEOUT PROCEDURES AND SUBMITTALS

PART 1   GENERAL

1.01   SECTION INCLUDES

A. Closeout Procedures.
B. Requirements.
C. Substantial Completion.
D. Final Review.
E. Additional Reviews.
F. Submittals.
G. Final Adjustment of Accounts.
H. Final Application for Payment.
I. Adjusting.
J. Operation and Maintenance Data.
K. Warranties.
L. Spare Parts and Maintenance Materials.

1.02   RELATED SECTIONS

A. Section 01 20 00 – Price and Payment Procedures
B. Section 01 21 00 – Allowances.
C. Section 01 75 00 - Starting and Adjusting: System start-up, testing, adjusting and balancing.
D. Section 01 78 39 – Project Record Documents.

1.03   REQUIREMENTS

A. Comply with requirements stated in conditions of the Contract and in specifications for administrative procedures in closing out the Work.
1.04 **SUBSTANTIAL COMPLETION**

A. When Contractor considers the work is Substantially Complete, he shall submit to the Architect:

1. A written notice that the Work or designated portion thereof, is Substantially Complete.

2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, Architect will review the Work to determine the status of completion.

C. Should Architect determine that the Work is not Substantially Complete:

1. Architect will promptly notify the Contractor in writing, giving the reasons therefor.

2. Contractor shall remedy the deficiencies in the work and send out another written notice of substantial completion to the Architect.

3. Architect will again review the work.

D. When Architect concurs that the Work is Substantially Complete, he will:

1. Prepare a Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect.

2. Submit the certificate to Owner, Contractor and manufacturer for their written acceptance of the responsibilities assigned to them in the certificate.

1.05 **FINAL REVIEW**

A. When Contractor considers the Work is complete, he shall submit written certification that:

1. Contract documents have been reviewed.

2. Work has been inspected for compliance with Contract Documents.

3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.

5. Work is completed and ready for final review.

B. Architect will make final review to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should Architect consider that the Work is incomplete or defective:

1. Architect will promptly notify the Contractor in writing, listing the incomplete or defective work.

2. Contractor shall take immediate steps to remedy the stated deficiencies and send out another written certification to Architect that the work is complete.

3. Architect will again review the Work.

4. Should Architect consider that the Work is still incomplete or defective, all subsequent reviews shall be considered as Additional Reviews, subject to the provisions listed in 1.06 below.
D. When the Architect finds that the Work is acceptable under the Contract Documents and that all Punch List items have been accomplished to his satisfaction, he shall request the Contractor to make closeout submittals.

1.06 FEES FOR ADDITIONAL REVIEWS

A. Should Architect perform additional reviews due to failure of the Work to comply with the claims of status of completion made by the Contractor:
   1. Owner will compensate Architect for such additional services.
   2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.07 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ARCHITECT

A. Provide (2) original copies & (2) digital copies (USB or CD) of all Closeout Documents as described below.

B. OPERATING AND MAINTENANCE DATA: Submit documentation as described in 1.11 below.

C. WARRANTIES, GUARANTEES AND BONDS: Submit documentation as described in 1.12 below.

D. SPARE PARTS AND MAINTENANCE MATERIALS FOR OWNER: Submit documentation as described in 1.13 below.

E. Contractor's affidavit of payment of debts and claims.

F. Contractor’s affidavit of release of liens.

G. Consent of surety to final payment.

H. Certificate of insurance for products and completed operations.

I. PROJECT RECORD DRAWINGS: Submit documentation as described in Section 01 78 39.

1.08 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to Architect.

B. Statement shall reflect all adjustments to the Contract Sum:
   1. The original Contract Sum.
   2. Additions and deductions resulting from:
      a. Previous Change Orders, allowances and unit prices.
      b. Deductions for uncorrected work, liquidated damages and re-inspection payments.
      c. Other adjustments.
   3. Total Contract Sum, as adjusted.
   4. Previous payments.
   5. Sum remaining due.

C. Architect will prepare a final change order reflecting approved adjustments to the Contract sum that were not previously made by Change Orders.
1.09 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit the final application for payment in accordance with procedures and requirements stated in the General Conditions.

1.10 ADJUSTING

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

1.11 OPERATION AND MAINTENANCE DATA

A. Submit one copy of completed volumes in final form 5 days prior to final inspection. This copy will be returned with Architect/Engineer comments. Revise content of documents as required prior to final submittal.

B. Submit Operation and Maintenance Data bound in 8-1/2 x 11 inch text pages, three D side-ring capacity expansion binders with durable plastic covers. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project and subject matter of binder when multiple binders are required.

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. CONTENTS: Prepare a Table of Contents for each volume, with each Product or system description identified, type on 24 pound white paper.

E. PART 1: Directory, listing names, addresses and telephone numbers of Architect, Engineers, Contractor, Subcontractors and major equipment suppliers.

F. PART 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses and telephone numbers of Subcontractors and suppliers. Identify the following:

1. Significant design criteria.
2. List of equipment.
3. Parts list for each component.
4. Operating instructions.
5. Maintenance instructions for equipment and systems.
6. Maintenance instructions for all finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

G. PART 3: Project documents and certificates, including the following:

1. Shop drawings and product data.
2. Air and water balance reports.
3. Certificates.
4. Photocopies of warranties and bonds.

H. Submit final volumes revised, within ten days after final inspection.
1.12 WARRANTIES

A. Provide duplicate notarized copies.

1. In addition to the Warranty and Guarantee Requirements of the General Conditions, provide all other guarantees, bonds, affidavits and certifications required throughout the Project Manual.

B. Execute and assemble documents from Subcontractors, suppliers and manufacturers.

C. Provide Table of Contents and assemble in three D side-ring binder with durable plastic cover.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.13 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

B. Deliver to Project site and place in location as directed by the Owner; obtain receipt prior to final payment.
SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1   GENERAL

1.01 SECTION INCLUDES
   A. Project Record Documents required for Contract closeout.

1.02 RELATED SECTIONS
   A. Section 01 78 00 – Closeout Procedures and Submittals.

1.03 REQUIREMENTS
   A. Maintain at the site for the Owner one record copy of:
      1. Drawings
      2. Specifications
      3. Addenda
      4. Change Orders and other modifications to the Contract
      5. Architect field orders or written instructions
      6. Reviewed shop drawings, product data and samples
      7. Field test records
   B. The Contractor will be required to furnish, at no additional expense to the Owner, the services of a
      surveyor and/or Engineer registered in the state where the project is located and under whose direction
      shall be obtained and recorded all surveys, measurements and such other data required for the
      determination of the as-built records of the construction of all site work.

1.04 MAINTENANCE OF DOCUMENTS AND SAMPLES
   A. Store documents and samples in Contractor's field office apart from documents used for construction.
   B. Provide locked file cabinet for storage of documents and samples.
   C. File documents and samples in accordance with CSI/CSC format.
   D. Maintain documents in a clean, dry, legible condition and in good order. Do not use Record
      Documents for construction purposes.
   E. Make documents and samples available at all times for inspection by Architect and Owner.
Aharonian & Associates, Inc. – Architects  
Captain Isaac Paine Elementary School – Bathroom Renovations  
Foster, Rhode Island

1.05 MARKING DEVICES

A. Provide felt tip marking pens for recording information in the color code designated by Architect.

1.06 RECORDING

A. Label each document "Project Record" in neat large printed letters.

B. Record information concurrently with construction progress.

C. Do not conceal any work until required information is recorded.

D. DRAWINGS: Principal dimensions, elevations and other data as required shall be recorded for all work, such as:

1. Deviations of any nature made during construction.

2. Location of underground utilities.

3. Field changes of dimension and detail.

4. Changes made by field order or by Change Order.

5. Details not on original Contract Drawings.

E. The marked-up prints shall be inspected weekly by the Architect and shall be corrected immediately if found either inaccurate or incomplete.

F. SPECIFICATIONS AND ADDENDA: Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

2. Changes made by field order or by Change Order.

1.07 FINAL MEASUREMENTS

A. The Contractor shall provide qualified personnel and equipment for taking final measurements for quantities and Record Documents.

1.08 RECORD DRAWINGS

A. At the completion of the Project, the Record Drawings shall be submitted to the Architect for final review and comment.

B. The Contractor shall correct, amplify and do all other work as may be required by the Architect to complete the drawings in a manner satisfactory to the Architect and at no additional cost to the Owner.

C. Upon approval, the Contractor shall provide a final Record Drawing set to the Architect on heavyweight bond and electronic format (PDF). The bond and electronic version shall be submitted to the Owner by the Architect.

1.09 SUBMITTAL

A. At Contract close-out, deliver Record Documents to Architect for the Owner.

B. Accompany submittal with transmittal letter in duplicate, containing:

1. Date.
Aharonian & Associates, Inc. – Architects
Captain Isaac Paine Elementary School – Bathroom Renovations

2. Project title and number.
3. Contractor's name and address.
4. Title and number of each record document.
5. Signature of Contractor or his authorized representative.

PART 2  PRODUCTS (Not Used)

PART 3  EXECUTION (Not Used)

END OF SECTION  01 78 39
SECTION 01 81 13
NE-CCHPS SUSTAINABLE DESIGN REQUIREMENTS

### PART 1  GENERAL

**1.01  GENERAL PROVISIONS**

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

B. Northeast Collaborative for High Performance Schools (NE-CCHPS) New Construction and Major Renovations Version 3.0 applies to this Section.

**1.02  SUMMARY**

A. This Section includes general requirements and procedures for achieving NE-CCHPS credits.

B. Sustainable Design Intent: Comply with project requirements intended to achieve NE-CCHPS credits, measured and documented according to the NE-CCHPS Rating.

1. Refer to NE CHPS Scorecard
2. Refer to individual Specification Sections for additional requirements

C. Contractor is responsible for compliance with and completion of all required documentation for all the following NE-CCHPS Requirements:

1. Indoor Environmental Quality EQ7.0: Low Emitting Materials.

**1.03  RELATED WORK**

A. Examine Contract Documents for requirements that affect the work of this Section. Other Specification Sections that relate directly to work of this Section include, but not limited to:

2. Section 099100: Painting

**1.04  DEFINITIONS**

A. Construction and Demolition Waste: Includes solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair and demolition operations. A construction waste management plan is to be provided by the Contractor as defined in section 017419.


C. Sealant: Any material that fills and seal gaps between other materials.
D. Volatile Organic Compounds (VOC’s): Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbon acid, metallic carbides or barbonates, and ammonium carbonate, which participates in atmospheric photochemical reaction. Compounds that have negligible photochemical reactivity, listed in EPA 40 CFR 51, 100(s), are also excluded from this regulatory definition.

1.05 SUBMITTALS

A. GENERAL: Additional Sustainable Design Submittal requirements are included in other section of the Specification

B. SUSTAINABLE DESIGN SUBMITTALS:

1. Interior Paints and Coatings: Submittal for all field-applied paints and coatings, which have a potential impact on indoor air, must include manufacturer’s MSDS’s or other Product data highlighting VOC Content.

1.06 QUALITY ASSURANCE

A. Preconstruction Meeting: After award of Contract and prior to the commencement of the Work, schedule and conduct meeting with Owner, Engineer, and all Subcontractors to discuss the Construction Waste Management Plan, the required Construction Indoor Air Quality (IAQ) Management Plan, and all other Sustainable Design Requirements. The purpose of this meeting is to develop a mutual understanding of the Project’s Sustainable Design Requirements and coordination of the Contractor’s management of these requirements.

B. Construction Job Conferences: the status of compliance with the Sustainable Design Requirements of these specifications will be an agenda item at all regular job meetings conducted during the course of work at the site.

PART 2 PRODUCTS – (Not Used)

PART 3 EXECUTION – (Not Used)
# Collaborative for High Performance Schools (CHPS)

## Project Scorecard: NE-CHPS Version 3.0

### Collaborative for High Performance Schools (CHPS) School:

**School Name:** Captain Isaac Paine Elementary School

**Expected Completion:**

**School District:**

**School Address:** 160 Foster Center Road

**City:** Foster

**State:** RI

**Zip:** 02825

**School Contact:**

**Phone:**

**E-mail:**

**Notes:**

**Project Manager** (Signature)

**Name, Title, Date** (Please print)

---

### Use this scorecard to track expected scores. Note that prerequisites have points associated with them even though they are required. This enables project teams to talk more meaningfully about the effort being put into each section of the Criteria. Prerequisite point columns are also highlighted for reference. Mark each credit as ready for review by using the appropriate column for each phase of the review.

Key:

- **P** - Prerequisite
- **PS** - CHPS Plan Sheet Required
- **CD** - Construction Documents Required
- **A** - Attachment Required

### Criteria

#### Integration and Innovation

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**Subtotal**

#### Operations & Metrics

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**Subtotal**

#### Indoor Environmental Quality

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**Subtotal**
## Energy

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Subtotal: 250

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Subtotal: 250

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Subtotal: 250

## Materials and Waste Management

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Subtotal: 250

Total: 750
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

SECTION 02 41 13
SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Demolition and removal of selected portions of building elements.
B. Patching and repairs.

1.02 RELATED SECTIONS
A. Section 01 11 00 – Summary of Work: Use of the building.
B. Section 01 50 00 – Temporary Facilities and Controls.

1.03 DEFINITIONS
A. REMOVE: Remove and legally dispose of items except those indicated to be reinstall, salvaged or to remain the Owner's property.
B. REMOVE AND SALVAGE: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.
C. REMOVE AND REINSTALL: Remove items indicated; clean, service and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
D. EXISTING TO REMAIN: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.04 MATERIALS OWNERSHIP
A. Except for items or materials indicated to be reused, salvaged, reinstalled or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.05 QUALITY ASSURANCE
A. REGULATORY REQUIREMENTS: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
B. PRE-DEMOLITION CONFERENCE: Conduct conference at Project site to comply with preinstallation conference requirements of Section 01 31 19 - Project Meetings.

1.06 PROJECT CONDITIONS

A. Owner assumes no responsibility for actual condition of building elements to be selectively demolished.

B. Storage or sale of removed items or materials on-site will not be permitted.

1.07 SCHEDULING

A. Arrange selective demolition schedule so as not to interfere with Owner's on-site operations.

1.08 WARRANTY

A. EXISTING SPECIAL WARRANTY: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 PRODUCTS

2.01 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 EXECUTION

3.01 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 the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect.

E. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.

F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
3.02 UTILITY SERVICES

A. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to governing authorities.
   
a. Provide not less than 72 hours' notice to Owner if shutdown of service is required during changeover.

B. UTILITY REQUIREMENTS: Locate, identify, disconnect and seal or cap off indicated utility services serving building to be selectively demolished.

1. Owner will arrange to shut off indicated utilities when requested by Contractor.

2. Arrange to shut off indicated utilities with utility companies.

3. Where utility services are required to be removed, relocated or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.

4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit after bypassing.

C. UTILITY REQUIREMENTS: Refer to Divisions 23 and 26 Sections for shutting off, disconnecting, removing and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.03 PREPARATION

A. Drain, purge or otherwise remove, collect and dispose of chemicals, gases, explosives, acids, flammables or other dangerous materials before proceeding with selective demolition operations.

B. Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.

C. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.

1. Erect temporary protection, such as walks, fences, railings, canopies and covered passageways, where required by authorities having jurisdiction.

2. Protect existing site improvements, appurtenances and landscaping to remain.

3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
4. Provide temporary weather protection, during interval between demolition and removal of existing construction, on exterior surfaces and new construction to ensure that no water leakage or damage occurs to structure or interior areas.

5. Protect walls, ceilings, floors and other existing finish work that are to remain and are exposed during selective demolition operations.

6. Cover and protect furniture, furnishings and equipment that have not been removed.

E. Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

1. Construct dustproof partitions of not less than nominal 4-inch studs, 5/8-inch gypsum wallboard with joints taped on occupied side, and 1/2-inch fire-retardant plywood on the demolition side.

2. Insulate partition to provide noise protection to occupied areas.

3. Seal joints and perimeter.

4. Equip partitions with dustproof doors and security locks.

5. Protect air-handling equipment.

6. Weatherstrip openings.

F. Provide and maintain interior and exterior shoring, bracing or structural support to preserve stability and prevent movement, settlement or collapse of building to be selectively demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.04 POLLUTION CONTROLS

A. Use water mist, temporary enclosures and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

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

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist or other device that will convey debris to grade level.

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

3.05 SELECTIVE DEMOLITION

A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.

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. To minimize
disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. 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 throughout the structure 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. On-site storage or sale of removed items is prohibited.

10. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.

C. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.

D. Break up and remove concrete slabs on grade, unless otherwise shown to remain.

E. Remove resilient floor coverings and adhesive according to recommendations of the Resilient Floor Covering Institute's (RFCI) "Recommended Work Practices for the Removal of Resilient Floor Coverings" and Addendum.

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

G. Remove no more existing roofing than can be covered in one day by new roofing.

H. Remove air-conditioning equipment without releasing refrigerants.

3.06 PATCHING AND REPAIRS

A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

B. Patching is specified in Section 01 73 29 Cutting and Patching.

C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

1. Completely fill holes and depressions in existing masonry walls to remain with an approved masonry patching material, applied according to manufacturer's printed recommendations.
D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

E. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.
   1. Closely match texture and finish of existing adjacent surface.
   2. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
   3. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat.
   4. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   5. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

F. Patch, repair or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

A. GENERAL: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. BURNING: Do not burn demolished materials.

C. DISPOSAL: Transport demolished materials off Owner's property and legally dispose of them.

3.08 CLEANING

A. Sweep the building broom clean on completion of selective demolition operation.

B. Change filters on air-handling equipment on completion of selective demolition operations.

END OF SECTION 02 41 13
SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1  GENERAL

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

1.02  SUMMARY
A. This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Slab-on-Grade.

1.03  DEFINITIONS
A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.04  SUBMITTALS
A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Field quality-control test and inspection reports.
1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade I, according to ACI CP-01 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specification for Structural Concrete."
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
2.02 FORM-FACING MATERIALS

A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

C. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
   1. Furnish units that will leave no corrodbile metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
   2. Furnish ties that, when removed, will leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.

2.03 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60.

B. Plain-Steel Wire: ASTM A 82.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.04 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
   1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.05 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
   1. Portland Cement: ASTM C 150, Type I/II.

   1. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm) nominal.
   2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

2.06 ADMIXTURES


B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
5. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

C. Plastic Vapor Retarder: ASTM E 1745, Class C or polyethylene sheet, ASTM D 4397, not less than 10 mils. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.

1. Fortifiber Corporation; Moistop Plus.
3. Reef Industries, Inc.; Griffolyn Type 65.
4. Stego Industries, LLC; Stego Wrap, 10 mils.

D. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

2.07 CURING MATERIALS

A. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. Available Products:
   a. Burke by Edoco; Cureseal 1315 WB.
   b. ChemMasters; Polyseal WB.
   c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315 WB.
   d. Euclid Chemical Company (The); Super Diamond Clear VOX.
   f. Lambert Corporation; UV Safe Seal.
   g. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.
   i. Metalcrete Industries; Metcure 30.
   j. Symons Corporation, a Dayton Superior Company; Cure & Seal 31 Percent E.
   k. Tamms Industries, Inc.; LusterSeal WB 300.
   l. Unitex; Hydro Seal 25.
   m. US Mix Products Company; US Spec Radiance UV-25.
   n. Vexcon Chemicals, Inc.; Vexcon StarSeal 1315.

2.08 RELATED MATERIALS

B. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.09 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.10 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture in all concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

2.11 CONCRETE MIXTURES FOR BUILDING ELEMENTS
A. Interior Concrete

1. Minimum Compressive Strength: 4,000 psi (27.6 MPa) at 28 days.
3. Slump Limit: 5 inches (125 mm), plus or minus 1 inch (25 mm).
4. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.

2.12 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.13 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 EXECUTION

3.01 FORMWORK

A. Design, erect, brace, and maintain formwork, according to ACI 301, to support lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.
2. Class B, 1/4 inch (6 mm) for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.

F. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

I. Coat contact surfaces of forms with form-release agent, according to manufacturer’s written instructions, before placing reinforcement.

3.02 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.03 VAPOR RETARDERS

A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

B. Granular Course: Compact granular fill with mechanical equipment to elevation tolerances of plus 0 inch (0 mm) or minus 3/4 inch (19 mm).

3.04 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

3.05 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
   1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
   1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
   2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
   3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcementable items without causing mixture constituents to segregate.

E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
   2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

F. Hot-Weather Placement: Comply with ACI 301 and as follows:
   1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.06 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   1. Apply to concrete surfaces not exposed to public view.
B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.07 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile, or another thin-film-finish coating system.

2. Finish surfaces to the following tolerances, according to ASTM E 1155 (ASTM E 1155M), for a randomly trafficked floor surface:

   a. Specified overall values of flatness, F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 15; for suspended slabs.

3. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-foot- (3.05-m-) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 3/16 inch (4.8 mm).

D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.08 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
3.09 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Do not fill joints until construction traffic has permanently ceased.
B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semi rigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.11 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18 mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension in solid concrete, but not less than 1 inch (25 mm) in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.12 FIELD QUALITY CONTROL

A. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports as applicable.

B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.

5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

6. Compression Test Specimens: ASTM C 31/C 31M.

a. Cast and laboratory cure four standard cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C 39/C 39M; test one laboratory-cured specimen at 7 days and three specimens at 28 days.

a. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
10. Test results shall be reported in writing to Architect, Structural Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

END OF SECTION 03 30 00
SECTION 04 22 00
CONCRETE UNIT MASONRY

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Concrete masonry units for single wythe construction.
B. Mortar for masonry units.
C. Reinforcement, anchorage and accessories.
D. Masonry flashings.
E. Masonry sealer coating.

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

1.03  REFERENCES
A. ANSI/ASTM A82 - Cold-Drawn Steel Wire for Concrete Reinforcement.
C. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
D. ASTM B370 - Copper Sheet and Strip for Building Construction.
E. ASTM C129 – Non-Load Bearing Concrete Masonry Units.
F. ASTM C90 - Hollow Load Bearing Concrete Masonry Units.
I. ASTM C270 - Mortar for Unit Masonry.
J. ASTM C387 - Packaged, Dry, Combined Materials, for Mortar and Concrete.
L. ASTM C476 - Grout for Masonry.
M. ASTM C780 – Pre-construction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
P. UL - Underwriters' Laboratories.

1.04 SUBMITTALS
A. Submit product data under provisions of Section 01 33 00.
B. Submit samples under provisions of Section 01 33 00.
C. Submit four samples of masonry veneer units to illustrate color, texture and extremes of color range.
D. Include mortar design mix; indicate Proportion or Property method used, required environmental conditions and admixture limitations.
E. SAMPLES: Submit two ribbons of mortar color, illustrating color and color range.
F. Submit manufacturer's certificate under provisions of Section 01 33 00 that products meet or exceed specified requirements.

1.05 QUALIFICATIONS
A. INSTALLER: Company specializing in performing the work of this Section with minimum ten years documented experience.

1.06 REGULATORY REQUIREMENTS
A. Conform to requirements for masonry construction.

1.07 MOCK-UP (Not Used)

1.08 PRE-INSTALLATION CONFERENCE
A. Convene one week prior to commencing work of this Section.

1.09 DELIVERY, STORAGE AND HANDLING
A. Deliver products to site under provisions of Section 01 60 00.
B. Store and protect products under provisions of Section 01 60 00.
C. Accept masonry units on site. Inspect for damage.

1.10 ENVIRONMENTAL REQUIREMENTS
1.11 SEQUENCE AND SCHEDULING

A. Coordinate work under provisions of Section 01 31 13.

PART 2 PRODUCTS

2.01 MANUFACTURERS – CONCRETE MASONRY UNITS

A. Park Avenue Cement Block Company (specified below).

B. Manufacturers meeting or exceeding the requirements specified herein.

C. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 CONCRETE MASONRY UNITS

A. HOLLOW NON-LOAD BEARING CMU: ASTM C90, Grade N, Type I - Moisture Controlled; normal weight. Nominal modular sizes 4 x 16 x 8 inches and 6 x 16 x 8 inches as indicated on the Drawings. Provide special units for 90 degree corners, bond beams, lintels and control joints.

B. MASONRY LINTELS: Prefabricated or built-in-place masonry lintel made from bond beam CMU’s matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.03 MORTAR MATERIALS – CONCRETE MASONRY UNITS

A. PORTLAND CEMENT: ASTM C150, Type I.

B. AGGREGATES: ASTM C144, standard masonry type; clean, dry, protected against dampness, freezing and foreign matter.

C. HYDRATED LIME: ASTM C207, Type S.

D. WATER: Clean and free from injurious amounts of oil, alkali, organic matter or other deleterious material.

E. Use no admixtures unless written approval is obtained from Architect.

F. COLOR: As selected by Architect.

2.04 MORTAR MIXES – CONCRETE MASONRY UNITS

A. MORTAR FOR NON-LOAD BEARING WALLS AND PARTITIONS: ASTM C270, Type N, using the Property Method, 750 psi compressive strength.

B. MORTAR FOR ENGINEERED MASONRY: ASTM C270, Type S using the Property Method, 1800 psi compressive strength.

2.05 GROUT MIXES

A. GROUT: ASTM C476; consistency which will completely fill all spaces intended to receive grout.

2.06 MORTAR MIXING

A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270.
B. Add mortar color, if required, in accordance with manufacturer’s instructions. Provide uniformity of mix and coloration. Do not use anti-freeze compounds to lower the freezing point of mortar.

C. If water is lost by evaporation, retemper only within two hours of mixing.

D. Use mortar within two hours after mixing at temperatures of 80 degrees F, or two-and-one-half hours at temperatures under 50 degrees F.

2.07 ADMIXTURES

A. The use of air entraining, antifreeze compounds or calcium chloride admixtures or other substances is not allowed, unless otherwise approved by the Architect.

2.08 REINFORCEMENT AND ANCHORAGE

A. CMU PARTITIONS: Ladder type, welded wire units fabricated from 9 gage ASTM A82 cold-drawn steel wire with deformed side wire and smooth cross wire; ASTM A641 mill galvanized; Hohmann & Barnard, Inc. “Lox-All” Reinforcement #220.

B. JOINT STABILIZING ANCHORS: To connect new masonry walls to existing masonry walls at vertical control joints; Cold-drawn steel; hot dip galvanized; spaced at 2’ –0” on center vertically; “D/A 2200,” manufactured by Dur- O-Wall, Inc.”

C. REINFORCING STEEL: ASTM A615, 60 ksi 276, 414, 517 MPA yield grade, deformed billet bars, unprotected finish...

D. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.09 MASONRY FLASHINGS (Not Used)

2.10 ACCESSORIES

A. CLEANING SOLUTIONS: EaCo Chem “NMD 80 New Masonry Detergent”.

B. SUBSTITUTIONS: Under provisions of Section 01 60 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Verify items provided by other Sections of work are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

D. Beginning of installation means installer accepts existing conditions.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied to other Sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COURSING

A. Establish lines, levels and coursing indicated; protect from displacement.
B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Lay concrete masonry units in running bond. Course one unit and one mortar joint to equal 8 inches. Form concave mortar joints.

3.04 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head, bed and collar joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering courses of joints or excessive furrowing of mortar joints are not permitted.

D. Remove excess mortar as Work progresses. Do not permit mortar to drop or accumulate into cavity air space or to plug weep holes.

E. Interlock intersections and external corners.

F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace. Perform jobsite cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

G. Cut mortar joints flush where insulation bitumen damp proofing is applied.

3.05 REINFORCEMENT AND ANCHORAGES – SINGLE WYTHE MASONRY

A. Install horizontal joint reinforcement at 16 inches on center vertically.

B. Place masonry joint reinforcement in first horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place joint reinforcement continuous in first joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches. Extend minimum 16 inches each side of openings.

E. Reinforce joint corners and intersections with prefabricated corner pieces 16 inches oc.

3.6 GROUTED COMPONENTS

A. Reinforce bond beams as shown on Drawings, placed 1 inch from bottom of web.

B. Lap splices minimum 24 bar diameters.

C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

D. Place and consolidate grout fill without displacing reinforcing.

3.7 BUILT-IN WORK

A. As work progresses, build in metal door frames, window frames, wood nailing strips, anchor bolts, plates, lintels and other items furnished by other Sections.

B. Build in items plumb and level.

C. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
D. Do not build in organic materials subject to deterioration.

3.8 TOLERANCES

A. MAXIMUM VARIATION FROM UNIT TO ADJACENT UNIT: 1/32 inch.

B. MAXIMUM VARIATION FROM PLANE OF WALL: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.

C. MAXIMUM VARIATION FROM PLUMB: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

D. MAXIMUM VARIATION FROM LEVEL COURSING: 1/8 inch in 3 feet and 1/4 inch in 10 feet; 1/2 inch in 30 feet.

E. MAXIMUM VARIATION OF JOINT THICKNESS: 1/8 inch in 3 feet.

F. MAXIMUM VARIATION FROM CROSS SECTIONAL THICKNESS OF WALLS: 1/4 inch.

3.9 CUTTING AND FITTING

A. Cut and fit for concealed items as required. Coordinate with other Sections of Work to provide correct size, shape and location.

B. Obtain Architect approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.10 CLEANING

A. Clean work under provisions of Section 01 74 00.

B. Remove excess mortar and mortar smears.

C. Replace defective mortar. Match adjacent work.

D. Clean soiled surfaces with cleaning solution.

E. Use non-metallic tools in cleaning operations.

F. Use of acid or acid base cleaners or abrasives is strictly prohibited.

3.11 PROTECTION OF FINISHED WORK

A. Protect finished installation under provisions of Section 01 50 00.

B. Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.

END OF SECTION 04 22 00
SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Preparing sealant substrate surfaces.
B. Sealant and backing.

1.02 RELATED SECTIONS
A. Section 04 22 00 – Concrete Unit Masonry.
B. Division 22 Sections: Plumbing Fixtures.

1.03 REFERENCES
C. ASTM C790 - Use of Latex Sealing Compounds.
D. ASTM C834 - Latex Sealing Compounds.
E. FS TT-S-00227 - Sealing Compound: Elastomeric Type, Multi-Component.
F. SWI (Sealing and Waterproofers Institute) - Sealant and Caulking Guide Specification.

1.04 SUBMITTALS
A. Submit product data under provisions of Section 01 33 00.
B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, color and availability.
C. Submit samples under provisions of Section 01 33 00.
D. Submit two samples 1/2 x 1/2 inches in size illustrating colors selected. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

1.05 QUALITY ASSURANCE
A. MANUFACTURER: Company specializing in manufacturing the products specified in this Section with minimum ten years documented experience.
B. APPLICATOR: Company specializing in applying the work of this Section with minimum ten years documented experience.

C. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not install solvent curing sealants in enclosed building specs.

B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.07 SEQUENCING AND SCHEDULING

A. Coordinate work under provisions of Section 01 31 13.

B. Coordinate the work of this Section with all Sections referencing this Section.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 SEALANTS

A. TYPE 1: Not Used

B. TYPE 2: Tremco Tremflex 834 Siliconized Acrylic Latex Sealant
   1. General purpose, interior, one-part, paintable, pure acrylic latex sealant.
   2. Conforms to ASTM C834.
   3. +/- 12 1/2% joint movement capability.
   4. Acceptable for use where an acoustical sealant is required.

C. TYPE 3: Tremco Tremsil 200
   1. One-part, acetoxy silicone sealant.
   2. Conforms to ASTM C920, use NT, G, A and O and US Federal Specifications TT-S-00230, Class A and TT-S-001543A Class A.
   3. White and clear colors; containing fungicide.

2.03 ACCESSORIES

A. PRIMER: Non-staining type, recommended by sealant manufacturer to suit application.

B. JOINT CLEANER: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. JOINT BACKING: ANSI/ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width, No. 92 Green Rod Closed Cell Polyurethane manufactured by Pecora Corporation.

D. BOND BREAKER: Pressure sensitive tape recommended by sealant manufacturer to suit application.
2.04 COLORS

A. Colors to be selected by Architect from sealant manufacturer's standard range.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive Work and are as shown on Drawings and as recommended by sealant manufacturer.

B. Beginning of installation means installer accepts existing substrate.

3.02 PREPARATION

A. Thoroughly clean joints in accordance with manufacturer's instructions. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Verify that joint backing and release tapes are compatible with sealant.

C. Protect elements surrounding the work of this Section from damage or disfiguration. Apply masking tape to each exposed surface of joints.

3.03 INSTALLATION

A. Install sealant in strict accordance with manufacturer's instructions; ASTM C804 for solvent release sealants and ASTM C790 for latex base sealants.

B. Measure joint dimensions and size materials to achieve a 2 to 1 width/depth ratio. Sealant depth shall not be more than 3/4 inch and not less than 3/8 inch.

C. Joints in excess of 3/4 inch in depth that have no means of providing a backup for sealant, shall receive joint backing material. Place backing material in joints taking care to maintain a constant depth 1/8 inch greater than the sealant depth tolerances specified.

1. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.

2. Do not stretch backing into joints. Backing shall be continuous, no voids allowed.

D. Install bond breaker where joint backing is not used.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

1. Apply sealants using a hand caulking gun or power gun with a nozzle of proper size and sufficient power to completely fill joints.

F. Install sealant in neat manner in true lines free of air pockets, foreign embedded matter, ridges or sags.

G. Tool joints with a dry or water wet tool only. Do not use detergents or soapy water for tooling operations. Tool joints slightly concave, creating an hourglass sealant profile within the joint.

1. Fillet beads are not acceptable unless approved by the Architect or shown as such on the Drawings. Sealant shall not lap over the face of adjacent work being sealed.

H. Remove masking tape immediately after tooling or before sealant has taken initial set.

3.04 CLEANING AND REPAIRING
A. Clean work under provisions of Section 01 60 00.
B. Clean adjacent soiled surfaces.
C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.05 PROTECTION OF FINISHED WORK
A. Protect finished installation under provisions of Section 01 60 00.
B. Protect sealants until cured.

3.06 SEALANT SCHEDULE
TYPE 1: Not Used.
TYPE 2: All interior conditions unless noted otherwise; at countertop and wall intersections.
TYPE 3: Interior: Around fixtures in toilet rooms, kitchens, janitor’s closets and other "wet” locations.

END OF SECTION 07 92 00
SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1   GENERAL

1.01  SECTION INCLUDES

   A. Non-rated and rated rolled steel doors and frames.

1.02  RELATED SECTIONS

   A. Section 04 22 00 – Concrete Unit Masonry.
   B. Section 07 92 00 - Joint Sealants.
   C. Section 08 71 00 - Door Hardware.
   D. Section 09 91 00 - Painting.

1.03  REFERENCES

   B. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   D. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory-Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
   E. ANSI A250.6 - Hardware on Standard Steel Doors (Reinforcement--Application).
   F. ANSI A250.7 - Nomenclature for Standard Steel Doors and Steel Frames.
   G. ANSI A250.8 - Recommended Specifications for Standard Steel Doors & Frames.
   K. SDI-105 - Recommended Erection Instructions for Steel Frames; Steel Door Institute.
   L. SDI-117 - Manufacturing Tolerances for Standard Steel Doors and Frames; Steel Door Institute.
Aharonian & Associates, Inc. – Architects
Captain Isaac Paine Elementary School – Bathroom Renovations       Foster, Rhode Island

M.  SDI-124 - Maintenance of Hollow Metal Doors and Frames; Steel Door Institute.
N.  UL 10B - Standard for Fire Tests of Door Assemblies; Underwriters Laboratories Inc.
O.  WHI - Intertek Testing Services Inc./Warnock Hersey International Inc.

1.04 QUALITY ASSURANCE
A. Conform to requirements of SDI-100.

1.05 SUBMITTALS
A. Submit shop drawings and product data under provisions of Section 01 33 00.
B. Indicate frame configuration, anchor types and spacing, location of cutouts for hardware, reinforcement and finish.
C. Indicate door elevations, internal reinforcement, closure method and cutouts for glazing and louvers.
D. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

1.06 DELIVERY, STORAGE AND HANDLING
A. Protect products under provisions of Section 01 60 00.
B. Protect doors and frames with resilient packaging sealed with heat shrunk plastic.
C. Break seal on-site to permit ventilation.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Steelcraft.
B. Ceco Corporation.
C. Amweld.
D. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 MATERIALS
A. COLD-ROLLED STEEL; ASTM A366 or ASTM A568, commercial quality carbon steel.
B. ANCHORS AND FASTENERS; Manufacturer’s standard units fabricated from not less than 18 gauge galvanized sheet steel or 18 gauge hot-dip galvanized steel complying with ASTM A153, Class C or D
C. PRIMER: Thermosetting primer which is compatible with finish system.

2.03 DOORS AND FRAMES
A. INTERIOR DOORS: SDI-100 Grade II (Heavy duty), Model 4 (Seamless, composite construction).
B. INTERIOR FRAMES: 18 gage thick material, core thickness; welded construction.
C. FIRE RATED DOORS AND FRAMES:
   1. Labels: UL or Warnock-Hersey labels for the exposures indicated.
      a. Items provided with labels other than the fire resistive rating shown on the Door Schedule are not permitted and will be rejected.
b. If any item noted to be fire rated cannot qualify for appropriate labeling, obtain instructions from the Project Manager before beginning fabrication on that item.
c. All Fire Rated Doors shall be pre-cored on the hinge side, 3/8” diameter to the lock for installation of access control device. The center hinge must match center-to-center for transfer installation at the core.

2.04 DOOR CORE

A. CORE: Impregnated cardboard honeycomb at interior doors; Polyurethane insulation at exterior doors; Mineral fiberboard at fire rated doors.

B. INSULATED DOOR: U-Value – 0.36.

2.05 ACCESSORIES

A. RUBBER SILENCERS: Resilient rubber.

B. GLAZING STOPS: Rolled steel channel shape, mitered corners; prepared for countersink style screws.

C. Prep door frames for electric strikes as noted within hardware schedule.

2.06 PROTECTIVE COATINGS

A. BITUMINOUS COATING: Fibered asphalt emulsion.

B. PRIMER: Zinc chromate type.

2.07 FABRICATION

A. Fabricate frames as welded units at exterior and interior locations.

B. Fabricate frames and doors with hardware reinforcement plates welded in place. Provide mortar guard boxes.

C. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.

D. Prepare frame for silencers. Provide three single rubber silencers for single doors [and mullions of double doors] on strike side, and two single silencers on frame head at double doors without mullions.

E. Attach fire rated label to each frame and door unit. Place where visible when doors and frames are in open, installed position.

F. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.

2.08 FINISH

A. INTERIOR UNITS: A60 galvanized at wet locations only.

B. PRIMER: Manufacturer’s standard baked on type.

C. FINISH: Field finish in accordance with Section 09 91 00; Color as selected by Architect.

2.09 DOOR SCHEDULE

A. Doors 100 & 101
   Size: 36” x 80 (verify existing masonry opening sizes in field as required)
   Thickness: 1 ¾” door / 2” Frame
   Frame Depth: 6 ¾”
   Hardware: See Section 08 71 00 Door Hardware.
B. Coordinate all door & frame sizes and frame anchorage to adjacent construction with field conditions as required. Notify Architect of any discrepancies noted that may alter the intended scope of work.

**PART 3  EXECUTION**

3.01 INSTALLATION

A. Install frames in accordance with SDI-105.

B. Install doors in accordance with DHI.

C. Coordinate with masonry and gypsum board systems wall construction for anchor placement.

D. Coordinate installation of glass and glazing.

E. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.02 TOLERANCES

A. MAXIMUM DIAGONAL DISTORTION: 1/16 inch measured with straight edge, corner to corner.

3.03 ADJUSTING AND CLEANING

A. Adjust hardware for smooth and balanced door movement.

END OF SECTION  08 11 13
CAPTAIN ISAAC PAINE ELEMENTARY SCHOOL
Bathroom Renovations
Foster, Rhode Island

SECTION 08 71 00
DOOR HARDWARE

PART 1   GENERAL

1.01  SECTION INCLUDES
       A. Hardware for doors.
       B. Thresholds and gasketing.

1.02  PRODUCTS FURNISHED BUT INSTALLED UNDER OTHER SECTIONS
       A. Furnish templates to Section 08 11 13 for door and frame preparation.

1.03  RELATED SECTIONS
       A. Section 08 11 13 – Hollow Metal Doors and Frames.

1.04  REFERENCES
       A. Rhode Island State Building Code.
       B. BHMA - Builder's Hardware Manufacturers Association.
       C. DHI - Door and Hardware Institute.
       D. NAAM - National Association of Architectural Metal Manufacturers.
       G. AWI - Architectural Woodwork Institute.

1.05  COORDINATION
       A. Coordinate work of this Section with other directly affected Sections involving manufacturer of any internal reinforcement for door hardware.

1.06  QUALITY ASSURANCE
       A. MANUFACTURERS: Companies specializing in manufacturing door hardware with minimum ten years documented experience. HARDWARE SUPPLIER: Company specializing in supplying commercial institutional door hardware with ten years documented experience.
B. HARDWARE SUPPLIER PERSONNEL: Employ an Architectural Hardware Consultant (AHC) to assist in the work of this Section; paid directly by General Contractor.

1.07 CERTIFICATIONS
A. Architectural Hardware Consultant shall inspect complete installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer’s instructions.
B. Provide two copies of certifications to Architect.

1.08 REGULATORY REQUIREMENTS
A. Conform to the applicable sections of Chapter 5 of NFPA 101 and Rhode Island State Building Code.

1.09 SUBMITTALS
A. Submit simultaneously with submittals from Section 08 11 13.
B. Submit schedule, shop drawings and product data under provisions of Section 01 33 00.
C. Indicate locations and mounting heights of each type of hardware.
D. Provide product data on specified hardware.
E. Submit manufacturer's parts lists, templates and installation instructions under provisions of Section 01 33 00.

1.10 OPERATION AND MAINTENANCE DATA
A. Submit operation and maintenance data under provisions of Section 01 78 00.
B. Include data on operation of hardware, lubrication requirements and inspection procedures related to preventative maintenance.

1.11 DELIVERY, STORAGE AND HANDLING
A. Deliver products to site under provisions of Section 01 60 00.
B. Store and protect products under provisions of Section 01 60 00.
C. Package hardware items individually. Label and identify package with door opening code to match hardware schedule.
D. Deliver keys to Owner by security shipment direct from hardware supplier.
E. Protect hardware from theft by cataloging and storing in secure area.

1.12 WARRANTY
A. Provide Manufacturer's Standard warranty under provisions of Section 01 78 00.

1.13 MAINTENANCE MATERIALS
A. Provide special wrenches and tools applicable to each different or special hardware component.
B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 PRODUCTS
2.01 ACCEPTABLE MANUFACTURERS

A. BUTTS (Heavy Duty Ball Bearing)
   1. Hager Hinge Company.
   2. Stanley Hardware.
   3. Yale Locks & Hardware.

B. CLOSERS
   1. LCN Closers.

C. PUSH/PULL, PROTECTION PLATES AND WALL BUMPERS
   1. Rockwood.
   2. H B Ives.

D. THRESHOLDS AND GASKETING (Silicone type)
   1. Pemko.
   2. Reese Enterprises, Inc.

E. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 BUTTS

A. Full Mortise; 4-1/2 x 4-1/2; heavy duty ball bearing; 5 knuckle; square corners; non-removable pins at exterior locations and as noted.

2.03 CLOSERS DEVICES

A. Non-handed; delay action; variable backcheck: LCN 4040 Series.

2.04 PUSH/PULL, PROTECTION PLATES, WALL BUMPERS AND FLOOR STOPS

A. 8 inch pull (Ives 8200/8308 Push/Pull; 8400 Protection plate; 406/407 WSCVX and WS 401 CCV Wall bumpers; FS436 Dome floor stop; Glynn-Johnson 450 Series Overhead Stop).

2.05 FINISHES

A. FINISHES: 626 (US26D), unless noted otherwise.

2.06 SIGNAGE & IDENTIFICATION

A. Provide & Install ADA Compliant Room identifying signage on Doors. Coordinate requirements /specification with Owner’s building standard as applicable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.

B. Verify that power supply is available to power operated devices.

C. Beginning of installation means acceptance of existing conditions.
3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of SDI, ANSI/NFPA 80, BHMA, DHI, NAMM and AWI.

B. Use the templates provided by hardware item manufacturer.

C. Conform to ANSI A117.1 for positioning requirements for the handicapped.

3.03 SCHEDULE

A. Each door shall receive the hardware as noted on Drawings, as herein specified or as required by applicable codes. Provide exterior grade and fire rated grade as required.

B. HARDWARE SETS

<table>
<thead>
<tr>
<th>SET 01 (Door # 100 &amp; 101)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Heavy duty hinges</td>
</tr>
<tr>
<td>1 Closer</td>
</tr>
<tr>
<td>1 Stop (type appropriate for location)</td>
</tr>
<tr>
<td>1 Set Silencer</td>
</tr>
<tr>
<td>1 Kick plate (push side of door)</td>
</tr>
<tr>
<td>1 Push/Pull</td>
</tr>
<tr>
<td>1 Transition Strip (Schluter). Coordinate type with field conditions as required.</td>
</tr>
</tbody>
</table>

END OF SECTION  08 71 00
SECTION 09 30 13
CERAMIC TILE

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Ceramic tile wall, floor and base finish using the thin set application method.

1.02 REFERENCES
A. ANSI/TCA A108.4 - Installation of Ceramic Tile with Water Resistant Organic Adhesive.
B. ANSI/TCA A136.1 - Organic Adhesives for Installation of Ceramic Tile, Type 1 and Type 2.
C. ANSI/TCA A137.1 - Specifications for Ceramic Tile.
D. TCA (Tile Council of America) - Handbook for Ceramic Tile Installation.

1.03 SUBMITTALS
A. Submit product data under provisions of Section 01 33 00.
B. Submit product data indicating material specifications, characteristics and instructions for using adhesives and grouts.
C. Submit samples under provisions of Section 01 33 00.
D. Submit manufacturer's installation instructions under provisions of Section 01 33 0.
E. Submit manufacturer's certificate under provisions of Section 01 33 00 that products meet or exceed specified requirements and ANSI/TCA A137.1.
F. Submit maintenance data under provisions of Section 01 78 00.
G. Include recommended cleaning and stain removal methods, cleaning materials and polishes and waxes.

1.04 QUALITY ASSURANCE
A. Conform to ANSI/TCA A137.1.
B. Conform to TCA Handbook for Ceramic Tile Installation; ANSI/TCA A108.4.

1.05 QUALIFICATIONS
A. MANUFACTURER: Company specializing in the manufacture of products specified in this Section with minimum ten years documented experience.
Aharonian & Associates, Inc. – Architects
Captain Isaac Paine Elementary School – Bathroom Renovations Foster, Rhode Island

B. INSTALLER: Company specializing in applying the work of this Section with minimum five years documented experience.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00.
B. Store and protect products under provisions of Section 01 60 00.
C. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not install adhesives in a closed, unventilated environment.
B. Maintain 50 degrees F during installation of mortar materials.

1.08 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
B. TILE AND TRIM UNITS: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern and size.

PART 2 PRODUCTS

2.01 MANUFACTURERS - TILE

A. Crossville Inc.
B. American Olean
C. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 TILE MATERIALS

A. CT-01: CERAMIC FLOOR TILE: Crossville Basalt ANSI/TCA A137.1, conforming to the following:
1. MOISTURE ABSORPTION: <0.20% ASTM C373.
2. BREAKING STRENGTH: >500 lab ASTM C648.
3. BOND STRENGTH: >200 psi ASTM C482.
4. SCRATCH HARDNESS: 7 Mohs Scale
5. SURFACE FINISH: UNGLAZED.
6. EDGE: Square.
7. SIZE: 12 x 24” x 3/8 inch.
8. SHADE INDEX: V3
9. COLOR: As selected by Architect

B. WT-01 & WT-03: GLAZED CERAMIC WALL TILE: American Olean Bright Profiles ANSI/TCA A137.1, conforming to the following:
1. MOISTURE ABSORPTION: <0.20%
3. SCRATCH HARDNESS: 4.0-6.5 MOHS SCALE
4. SIZE: 3 x 6 x 5/16 inch.
5. SHADE INDEX: V1
6. EDGE: Square; Bullnose cap trim.
7. SURFACE FINISH: Gloss glazed.
8. COLOR: As selected by Architect.

C. FLOOR TILE SLIP-RESISTANCE REQUIREMENTS
   1. COEFFICIENT OF FRICTION REQUIRED LEVEL OF PERFORMANCE: Not less than 0.7 when tested in accordance with ASTM F462 for Locker Rooms, Toilet Rooms and other “wet” areas.

E. TRANSITION STRIP (As applicable at doors)
   1. Schluter®-Reno-U: Description: A trapezoid-perforated anchoring leg, which is secured in the mortar bond coat beneath the tile and a sloped surface (appox. 25°).
   2. Anchoring Leg: a. Provide with straight anchoring leg b. Provide with special radius anchoring leg for radius applications
   3. Material and Finish: A – Aluminum
   4. Height: Height as required

2.03 SETTING MATERIALS
   A. ORGANIC ADHESIVE: ANSI/TCA A136.1, Type 1 thin set bond type.

2.04 MANUFACTURERS - GROUT
   A. American Olean Tile Company.
   B. Bostik.
   C. Laticrete International, Inc.
   D. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.05 GROUT MATERIALS
   A. GROUT: Cementitious type resistant to shrinking with latex additive.
   B. COLOR ADMIXTURE: Type and color as selected by Architect.

2.06 GROUT MIX
   A. Mix and proportion pre-mix setting bed and grout materials in accordance with manufacturer's instructions and TCA Handbook for Ceramic Tile Installation.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that surfaces are ready to receive work.
   B. Beginning of installation means installer accepts condition of existing surfaces and substrate.

3.02 PREPARATION
   A. Protect surrounding work from damage or disfiguration.
   B. Vacuum clean existing surfaces and damp clean.
   C. Seal substrate surface cracks with filler. Level substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION
A. Install adhesive, tile and grout in accordance with manufacturer's instructions and to TCA Handbook for Ceramic Tile Installation, current edition.

B. Place bullnose edge strips at exposed tile edges.

C. Cut and fit tile tight to penetrations through tile. Form corners and bases neatly. Align floor and base joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks excess mortar or excess grout.

E. Sound tile after setting. Replace hollow sounding units.

F. Keep expansion and control joints free of adhesive or grout. Apply sealant to joints; locate joints in accordance with tile manufacturer's recommendations.

G. Allow tile to set for a minimum of 48 hours prior to grouting.

H. Grout tile joints.

I. Apply sealant to junction of tile and dissimilar materials and at junction of dissimilar planes.

3.04 CLEANING

A. Clean work under provisions of 01 74 00.

B. Clean tile surfaces.

3.05 PROTECTION OF FINISHED WORK

A. Protect finished installation under provisions of Section 01 60 00.

B. Do not permit traffic over finished floor surface.

END OF SECTION 09 30 13
SECTION 09 91 00
PAINTING

PART 1  GENERAL

1.01  SECTION INCLUDES

A. Surface preparation.
B. Surface finish schedule.

1.02  REFERENCES

A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer and Related Products.

1.03  DEFINITIONS

A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.04  QUALITY ASSURANCE

A. PRODUCT MANUFACTURER: Company specializing in manufacturing quality paint and finish products with 20 years experience.
B. APPLICATOR: Company specializing in commercial painting and finishing with 10 years documented experience.

1.05  REGULATORY REQUIREMENTS

A. Conform to applicable code for flame/fuel/smoke rating requirements for finishes.

1.06  ENVIRONMENTAL REQUIREMENTS

A. Low VOC Requirement (NE CHPS EQ7.0 Low Emitting Materials) – Affected Products - All Wall Paint, primers, coatings, sealers, Floor Sealers and coatings. 90% or more, of the total volumes of such products shall meet the applicable VOC content requirements of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for architectural coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, Effective June 3, 2011. Compliance shall be documented by product data sheets or equivalent. Use definitions and table values in the selected VOC content standard and clearly identify the standard selected for each product.
B. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during and 48 hours after application of finishes, unless required otherwise by manufacturer’s instructions.
C. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent unless allowed or required otherwise by manufacturer's instructions. MINIMUM APPLICATION TEMPERATURES FOR LATEX PAINTS: 45 degrees F for interiors; 50 degrees F for exterior; unless allowed or required otherwise by manufacturer's instructions.

D. MINIMUM APPLICATION TEMPERATURE FOR VARNISH AND URETHANE FINISHES: 65 degrees F for interior or exterior, unless allowed or required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.07 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Provide product data on all finishing products and special coatings.

C. Submit samples under provisions of Section 01 33 00.

D. Submit two samples 1 x 1 inch in size illustrating range of colors and textures available for each surface finishing product scheduled, for selection.

E. Submit manufacturer's application instructions under provisions of Section 01 33 00.

1.08 FIELD SAMPLES

A. Provide samples under provisions of Section 01 33 00.

B. Provide one field sample panel for each type of coating, 4 feet square, illustrating coating color, texture and finish.

C. Locate where directed by Architect.

D. Accepted sample may not remain as part of the Work.

1.09 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00.

B. Store and protect products under provisions of Section 01 60 00.

C. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.

D. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation and instructions for mixing and reducing.

E. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in well ventilated area, unless required otherwise by manufacturer's instructions.

F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.10 EXTRA STOCK

A. Provide a five gallon container of each color and surface texture to Owner.

B. Label each container with color, texture and room locations, in addition to the manufacturer's label.
PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Except as otherwise specified, materials shall be the first line products of the following manufacturers:

1. Benjamin Moore.
2. Pittsburgh Paints.

B. Materials selected for coating systems for each type surface shall be the product of a single manufacturer.

2.02 MATERIALS

A. Products specified are as manufactured by paint companies identified with manufacturers listed in Paragraph 2.01.

B. Select primary products of the coating system from the products of a single manufacturer.

C. Secondary products not specified by name and required for the job, such as shellac, thinners, putty, shall be "best grade" or "first line" products of a reputable manufacturer.

D. COATINGS

1. Ready mixed, except field catalyzed coatings; tile-like gloss finish.

2. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.

3. Good flow and brushing properties; capable of drying or curing free of streaks or sags.

E. ACCESSORY MATERIALS: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.03 FINISHES

A. Refer to schedule at end of Section for surface finish schedule.

B. In addition to the finish systems specified in the painting schedule, materials shall be lead-free.

2.04 TINTING AND MIXING

A. Job mixing or tinting may be done only when approved by the Architect.

2.05 COLORS AND PATTERNS

A. Colors shall be as selected by the Architect from the manufacturer’s standard range of colors.

B. The Architect reserves the right to select, allocate and vary colors on different surfaces throughout the building.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that surfaces or substrate conditions are ready to receive work as instructed by the product manufacturer.
B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. CONCRETE UNIT MASONRY: 12 percent.

D. Beginning of installation means acceptance of surfaces or substrate.

3.02 PREPARATION

A. Remove electrical plates, hardware, light fixtures trim and fittings prior to preparing surfaces or finishing.

B. Correct minor defects and clean surfaces which affect work of this Section.

C. IMPERVIOUS SURFACES: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

D. UNIT MASONRY SURFACES SCHEDULED TO RECEIVE PAINT FINISH: Remove dirt, loose mortar, scale, salt or alkali powder and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

3.03 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.04 APPLICATION

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

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint.

I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT
A. Paint shop primed equipment.

B. Remove unfinished louvers, grilles, covers and access panels on mechanical and electrical components and paint separately.

C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports except where items are prefinished.

D. Replace identification markings on mechanical or electrical equipment when painted accidentally.

E. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles and convector and baseboard cabinets to match face panels.

F. Paint exposed conduit and electrical equipment occurring in finished areas.

G. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

H. Replace electrical plates, hardware, light fixture trim and fittings removed prior to finishing.

3.06 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials and debris.

C. Collect cotton waste, cloths and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

D. Touch up and restore finish where damaged. Do not mar surface finish of item being cleaned.

E. Leave storage space clean and in condition required for equivalent spaces in project.

3.07 SCHEDULE - INTERIOR SURFACES

A. 1 STEEL - SHOP PRIMED

   PRIME COAT: Prime with Acrylic Latex primer.
   1ST FINISH COAT: WATERBASED INTUMESCENT COATING
   2ND FINISH COAT: ALKYD GLOSS ENAMEL

B. CONCRETE BLOCK

   FILLER COAT: Heavy Duty Block Filler
   PRIME COAT: Extreme Bond Primer
   1ST FINISH COAT: Water Based Catalyzed Epoxy: Finish: Eg-Shel
   2ND FINISH COAT: Water Based Catalyzed Epoxy: Finish: Eg-Shel

C. STEEL – PRIMED

   PRIME COAT: Prime with Acrylic Latex primer.
   1ST FINISH COAT: Alkyd Gloss Enamel
   2ND FINISH COAT: Alkyd Gloss Enamel

END OF SECTION  09 91 00
SECTION 10 21 13
TOILET COMPARTMENTS

PART 1   GENERAL

1.01  SECTION INCLUDES
   A.  Floor mounted, overhead braced solid plastic toilet partitions.
   B.  Urinal screens.
   C.  Attachment hardware.

1.02  RELATED SECTIONS
   A.  Section 10 28 00 - Toilet Accessories.

1.03  REFERENCES

1.04  SUBMITTALS
   A.  Submit shop drawings under provisions of Section 01 33 00.
   B.  Submit shop drawings indicating partition layout and dimensions, panel and door sizes, door swings, elevations, anchorage and mounting details and finishes.
   C.  Submit product data under provisions of Section 01 33 00.
   D.  Submit product data for components, hardware and accessories.
   E.  Submit samples under provisions of Section 01 33 00.
   F.  Submit two samples 3 x 6 inch in size illustrating panel colors.
   G.  Provide a sample of each type of hardware, when requested by Architect.

1.05  REGULATORY REQUIREMENTS
   A.  Conform to ANSI A117.1 (2003) and applicable code for provisions for the physically handicapped.

1.06 FIELD MEASUREMENTS

A. Verify field measurements are as shown on shop drawings and as instructed by the manufacturer.

1.07 WARRANTY

A. Provide manufacturer’s standard 15 year warranty for toilet compartments.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. TOILET COMPARTMENTS


2. Bobrick.

3. American Sanitary.

C. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 MATERIALS

A. DOORS, PANELS AND PILASTERS: High density polyethylene solid plastic. (Homogenous color Throughout)

B. HEADRAIL: 6463-T5 alloy heavy duty extruded aluminum with anti-grip design; bright dip anodized finish; Headrail brackets: 16 gauge stainless steel, satin finish.

2.03 ACCESSORIES

A. PILASTER SHOE: One-piece solid molded plastic.

B. WALL BRACKETS: Extruded PVC plastic, 3/16 inch thick, 54 inches long, single ear type.

C. THROUGH BOLTS, SCREWS AND NUTS: Stainless steel, tamper resistant.

2.04 HARDWARE

A. HINGES: Integral hinge system, gravity type; adjustable for door close positioning; nylon bearings; fabricated from door and pilaster with no exposed metal parts.

B. STRIKE/KEEPER: 6463-T5 alloy heavy duty extruded aluminum with wrap around flanges; bright dip anodized finish; extruded black vinyl bumper.

C. LATCH AND HOUSING: 6463-T5 alloy heavy duty extruded aluminum slide latch and housing; latch housing finish: bright dip anodized; slide bolt and button finish: black anodized.

D. COAT HOOK & DOOR PULLS: Chrome plated zamak with rubber bumper tip. Outswinging doors: one door pull and one door stop made of chrome plated zamak. Accessible doors: one door pull on each side of door complying with 2010 ADA Standards 404.2.7 with one door stop, made of chrome plated zamak.
2.05 FABRICATION

A. Partitions shall be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self lubricating surface that resists marks from pens, pencils, markers and other writing instruments. All plastic components shall be covered with a protective plastic masking.

B. Doors and dividing panels shall be 55 inches high. Pilasters shall be 82 inches high with a 3 inch high pilaster shoe.

C. PARTITION PILASTER, PANEL AND DOOR THICKNESS: One inch thick with all edges rounded to a ¼ inch radius.

D. DOORS: 24 inches wide; 36 inches wide at handicapped accessible stalls.

E. Router cut openings in panels as required.

F. Manufacturer’s standard curtain and hooks.

2.06 FINISHES

A. PLASTIC: Finish color as selected by Architect from manufacturer’s standard range.

B. ALUMINUM: Anodized to clear color.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine site conditions and verify openings are ready to receive work.

B. Verify field measurements are as shown on Shop Drawings.

C. Verify correct location of built-in framing, anchorage, bracing and plumbing fixtures.

D. Beginning of installation means installer accepts existing conditions.

3.02 INSTALLATION

A. Erect in accordance with manufacturer’s instructions.

B. Install partitions components rigid, secure, plumb and level, with plastic laid out as shown on the shop drawings and manufacturer’s instructions. All doors and panels shall be mounted at 14 inches above finished floor. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed ¼ inch.

C. Attach panel brackets securely to walls using appropriate anchor devices.

D. Attach panels and pilasters to brackets with tamper resistant fasteners.

E. Anchor urinal screen panels to walls with continuous wall bracket.

F. Provide for adjustment of floor variations. Conceal floor fastenings with pilaster shoes.

G. Equip each toilet stall door with integral hinge system and door latch.

H. Install door strike keeper on each pilaster in alignment with door latch.

I. Equip each toilet stall door with one coat hook and bumper; locate on door in strict accordance with ADAAG and manufacturer’s instructions.
J. No evidence of cutting, drilling and/or patching shall be visible on finished work.

K. Finished surfaces shall be cleaned after installation and be left free of all imperfections.

3.03 ERECTION TOLERANCES

A. MAXIMUM VARIATION FROM PLUM OR LEVEL: 1/16 inch.
B. MAXIMUM MISPLACEMENT FROM INTENDED POSITION: 1/8 inch.

3.04 ADJUSTING

A. Adjust work under provisions of Section 01 60 00.

B. Adjust and align door hardware to uniform clearance at vertical edges of doors. Clearance space not to exceed 1/4 inch.

C. Adjust door hinges so that free movement is attained and will locate in-swinging doors in partial open position when unlatched. Return out-swinging doors to closed position.

3.05 CLEANING

A. Clean work under provisions of Section 01 74 00.

B. Remove protective coverings.

C. Clean surfaces and hardware.

3.06 PROTECTION OF FINISHED WORK

A. Protect finished installation under provisions of Section 01 60 00.

B. Field touch-up of finished surfaces will not be permitted. Replace damaged components.

END OF SECTION 10 21 13
SECTION 10 28 00
TOILET, BATH ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Manufactured items used in toilets rooms and at sinks in related spaces.

1.02 RELATED SECTIONS
A. Section 10 21 13 – Toilet Compartments

1.03 REFERENCES
A. ADAAG - Specifications for Making Buildings and Facilities Accessible To and Usable by Physically Handicapped People.
C. ANSI/ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips.
E. ANSI/ASTM A386 - Zinc Coating (Hot-Dip) on Assembled Steel Products.
G. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
H. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

1.04 SUBMITTALS
A. Submit product data in accordance with Section 01 33 00.
B. MANUFACTURER'S LITERATURE AND DATA
   1. All accessories specified.
   2. Show type of material, gages or metal thickness in inches, finishes, and when required, capacity of accessories.
   3. Show working operations of spindle for toilet tissue dispensers.
1.04 QUALITY ASSURANCE
   A. Each product shall meet, as a minimum, the requirements specified, and shall be a standard commercial product of a manufacturer regularly presently manufacturing items of type specified.
   B. Each accessory type shall be the same and be made by the same manufacturer.
   C. Each accessory shall be assembled to the greatest extent possible before delivery to the site.
   D. Include additional features, which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product.

1.05 DELIVERY, STORAGE AND HANDLING
   A. Deliver products to site under provisions of Section 01 60 00.
   B. Store and protect products under provisions of Section 01 60 00.
   C. Pack accessories individually to protect finish.
   D. Deliver accessories to the project only when installation work in rooms is ready to receive them.
   E. Deliver inserts and rough-in frames to site at appropriate time for building-in.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS
   A. Bobrick.
   B. American Specialties, Inc.
   C. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 MATERIALS
   A. Bobrick equipment model numbers are indicated on Drawings.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings or as instructed by the manufacturer.
   B. Beginning of installation means acceptance of existing conditions or substrate.

3.02 PREPARATION
   A. Before starting work notify Architect in writing of any conflicts detrimental to installation or operation of unit.
   B. Verify with the Architect the exact location of accessories.

3.03 INSTALLATION
TOILET, BATH ACCESSORIES
A. Install accessories in accordance with the manufacturer's printed instructions, ANSI A117.1 requirements and ASTM F446.

B. Install accessories plumb and level and securely anchor to substrate.

C. Install accessories in a manner that will permit the accessory to function as designed and allow for servicing as required without hampering or hindering the performance of other devices.

D. Position and install dispensers, and other devices in countertops, clear of drawers, permitting ample clearance below countertop between devices, and ready access for maintenance as needed.

E. Align mirrors, dispensers and other accessories even and level, when installed in battery.

F. Install accessories to prevent striking by other moving, items or interference with accessibility.

END OF SECTION 10 28 00
SECTION 22 07 00
PIPING INSULATION

PART 1 GENERAL

1.01 WORK INCLUDED
   A. Piping insulation.
   B. Jackets and accessories.

1.02 RELATED WORK
   A. Section 22 10 00 - Plumbing Piping.
   B. Section 22 14 00 Plumbing Specialties
   C. Section 22 42 00 – Plumbing Fixtures.

1.03 QUALITY ASSURANCE
   A. Applicator: Company specializing in piping insulation application with three years minimum experience.
   B. Materials: Flame spread/fuel contributed/smoke developed rating in accordance with NFPA 255 and UL 723. Fiberglass insulation shall have flame spread rating of 25/smoke developed rating of 50; calcium silicate insulation shall have flame spread rating of 0/smoke developed rating of 0.

PART 2 PRODUCTS

2.01 INSULATION
   A. Molded pipe insulation shall be manufactured to meet ASTM C 585 for sizes required in the particular system. It shall be of a type suitable for installation on piping systems. Molded fibrous glass pipe insulation shall comply with the requirements of ASTM C 547.
   B. For indoor systems operating at temperatures from zero to +450F: Heavy density Fiberglas pipe insulation with factory applied all-service jacket (ASJ) and Doublesure two component adhesive closure system, rated for a maximum service temperature of 850F. For large pipe sizes where SSL-II is not available, the single adhesive SSL closure may be substituted. Circumferential joints shall be sealed by butt strips having a two-component sealing system. Stapling is not required to complete the closure. When self sealing lap systems are used, sufficient thickness of insulation shall be used to maintain the outer surface temperature of the operating system below +150F. Manufacturer's data regarding thickness constraints in relation to operating temperature shall be followed. When multiple layers are required, all inner layer(s) shall be unjacketed. On cold systems, vapor barrier performance is extremely important. All penetrations of the ASJ and exposed ends of insulation must be sealed with vapor barrier mastic. If humidities in excess of
90% are expected, the ASJ shall be protected with either a mastic coating or a suitable vapor retarding outer jacket. Vapor seals at butt joints shall be applied at every fourth pipe section joint and at each fitting to provide isolation of water incursion.

C. Fittings and valves shall be insulated with pre-formed fiberglass fittings, fabricated sections of Fiberglas pipe insulation, Fiberglas pipe and tank insulation, Fiberglas blanket insulation, or insulating cement. Thickness shall be equal to adjacent pipe insulation. Finish shall be with pre-formed PVC fitting covers or as otherwise specified on contract drawings. Flanges, couplings and valve bonnets shall be covered with an oversized pipe insulation section sized to provide the same insulation thickness as on the main pipe section. An oversized insulation section shall be used to form a collar between the two insulation sections with low density blanket insulation being used to fill gaps. Jacketing shall match that used on straight pipe sections. Rough cut ends shall be coated with a suitable weather or vapor resistant mastic as dictated by the system location and service. On hot systems where fittings are to be left exposed, insulation ends should be beveled away from bolts for easy access. On cold systems, particular care must be given to vapor sealing the fitting cover or finish to the pipe insulation vapor barrier. All valve stems must be sealed with caulking which allows free movement of the stem but provides a seal against moisture incursion.

D. All piping shall be supported in such a manner that neither the insulation or the vapor/weather barrier is compromised by the hanger or the effects of the hanger. In all cases, hanger spacing must be such that the circumferential joint may be made outside the hanger. On cold systems, vapor barrier must be continuous, including material covered by the hanger saddle.

E. Piping systems 3" in diameter or less, insulated with Fiberglas insulation, may be supported by placing saddles of the proper length and spacing, under the insulation.

F. For hot or cold piping systems larger than 3" in diameter, operating at temperatures less than +200F and insulated with fiber glass, high density inserts such as wood or foam with sufficient compressive strength shall be used to support the weight of the piping system. At temperatures exceeding 200F, Calcium Silicate pipe insulation shall be used for high density inserts.

G. Calcium Silicate pipe insulation may be used to support the entire weight of the piping system provided the hanger saddle is designed so the maximum compressive load does not exceed 100 psi.

H. Where pipe shoes and roller supports are required, insulation shall be inserted in the pipe shoe to minimize pipe heat loss. Where possible, the pipe shoe shall be sized to be flush with the outer pipe insulation diameter.

I. Thermal expansion and contraction of the piping and insulation system can generally be taken care of by utilizing double layers of insulation and staggering both longitudinal and circumferential joints. Where long runs are encountered, expansion joints may be required where single layers of insulation are being used and should be so noted on the contract drawings.

**PART 3 EXECUTION**

**3.01 SITE INSPECTION**

A. Before starting work under this section, carefully inspect the site and installed work of other trades and verify that such work is complete to the point where installation of materials and accessories under this section can begin.

B. Verify that all materials and accessories can be installed in accordance with project drawings and specifications and material manufacturers' recommendations.

C. Verify, by inspecting product labeling, submittal data, and/or certifications which may accompany the shipments, that all materials and accessories to be installed on the project comply with applicable specifications and standards and meet specified thermal and physical properties.
3.02 PREPARATION
A. Ensure that all pipe and equipment surfaces over which insulation is to be installed are clean and dry.
B. Ensure that insulation is clean, dry, and in good mechanical condition with all factory-applied vapor or weather barriers intact and undamaged. Wet, dirty, or damaged insulation shall not be acceptable for installation.
C. Ensure that pressure testing of piping or duct systems has been completed prior to installing insulation.

3.03 INSTALLATION
A. Install all insulation materials and accessories in accordance with manufacturer's published instructions and recognized industry practices to ensure that it will serve its intended purpose.
B. Install insulation on piping subsequent to installation of heat tracing, painting, testing, and acceptance tests.
C. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other. Butt insulation joints firmly to ensure complete, tight fit over all piping surfaces.
D. Maintain the integrity of factory-applied vapor barrier jacketing on all pipe insulation, protecting it against puncture, tears or other damage.
E. Fittings: Cover valves, fittings, and similar items in each piping system using one of the following: Mitered sections of insulation equivalent in thickness and composition to that installed on straight pipe runs, or Insulation cement equal in thickness to the adjoining insulation, or PVC fitting covers insulated with material equal in thickness and composition to adjoining insulation.
F. Penetrations: Extend piping insulation without interruption through walls, floors, and similar piping penetrations, except where otherwise specified.
G. Joints: Butt pipe insulation against hanger inserts. For hot pipes, apply 3” wide vapor barrier tape or band over butt joints. For cold piping apply wet coat of vapor barrier lap cement on butt joints, and seal joints with 3” wide vapor barrier tape or band. All pipe insulation ends shall be tapered and sealed, regardless of service.
H. Vertical Piping: All insulated, exposed vertical piping within the building and all insulated piping exposed to the outdoors shall be additionally jacketed with 0.016” thick (minimum) aluminum. Vertical piping shall be protected to a height of 8’-0” above the floor.

3.04 FIELD QUALITY ASSURANCE
A. Upon completion of all insulation work covered by this specification, visually inspect the work and verify that it has been correctly installed. This may be done while work is in progress, to assure compliance with requirements herein to cover and protect insulation materials during installation.

3.05 PROTECTION
A. Replace damaged insulation which cannot be satisfactorily repaired, including insulation with vapor barrier damage and moisture-saturated insulation.
B. The insulation contractor shall advise the general and/or the mechanical contractor as to requirements for protection of the insulation work during the remainder of the construction period, to avoid damage and deterioration of the finished insulation work.

3.06 SAFETY PRECAUTIONS

A. Insulation contractor's employees shall be properly protected during installation of all insulation. Protection shall include proper attire when handling and applying insulation materials, and shall include (but not be limited to) disposable dust respirators, gloves, hard hats, and eye protection.

B. The insulation contractor shall conduct all jobsite operations in compliance with applicable provisions of the Occupational Safety and Health Act, as well as with all state and/or local safety and health codes and regulations that may apply to the work.

3.07 SCHEDULE

A. Domestic Hot and Cold Water - use the following thicknesses of insulation:

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Insulation Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runouts (to 1”)</td>
<td>1/2 inch</td>
</tr>
<tr>
<td>Up to 2”</td>
<td>1 1/2 inch</td>
</tr>
<tr>
<td>2 1/2” and over</td>
<td>2 inch</td>
</tr>
</tbody>
</table>

B. Condensate Waste Piping, Exposed Copper Waste Piping, Exterior Gas Piping, Piping Concealed Within Concrete Block Walls Or Buried Within Floor Slab - use 1/2 inch thick insulation for all pipe sizes.

END OF SECTION 22 07 00
SECTION 22 10 00
PLUMBING PIPING

PART 1  GENERAL

1.01  WORK INCLUDED

A.  Pipe and pipe fittings.
B.  Valves.
C.  Sanitary piping system.
D.  Domestic water piping system.

1.02  RELATED WORK

A.  Section 22 07 00 - Piping Insulation.
B.  Section 22 14 00 - Plumbing Specialties.
C.  Section 22 42 00 - Plumbing Fixtures.

1.03  QUALITY ASSURANCE

A.  Valves: Manufacturer's name and pressure rating marked on valve body. All valves shall be totally lead-free.
B.  Fittings: All domestic water piping fittings shall be totally lead-free.
C.  Welding Materials and Procedures: Conform to ASME Code and applicable state labor regulations.
D.  Welders Certification: In accordance with ANSI/ASME Sec 9.

1.04  DELIVERY, STORAGE, AND HANDLING

A.  Deliver products to site.
B.  Store and protect products.

PART 2  PRODUCTS

2.01  SANITARY WASTE AND VENT PIPING, BURIED WITHIN 5 FEET OF BUILDING

2.02 SANITARY WASTE AND VENT PIPING, ABOVE GRADE


B. Cast Iron Pipe: CISPI 301, hubless, service weight. Fittings: Cast iron. Joints: Pipe and fittings joined with clamp-and-shield couplings constructed of Type 304 stainless steel and incorporating a neoprene gasket meeting ASTM C564. Use only in accessible locations. The couplings shall be torqued to 100-125 inch-pounds, and shall be approved to Factory Mutual Standard Class I, 15 psi rated working pressure; each coupling shall bear FM approval mark, and shall be equal to couplings as manufactured by Clamp-All Corporation.


D. Copper Pipe: ASTM B88, Type K, hard drawn; Fittings; ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA.

2.03 WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING


2.04 WATER PIPING, ABOVE GRADE


2.05 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size 2 Inches and Under: 150 psig malleable iron unions for threaded ferrous piping; lead-free bronze unions for copper pipe, soldered joints.

B. Pipe Size over 2 Inches: 150 psig forged steel slip-on flanges for ferrous piping; lead-free bronze flanges for copper piping; neoprene gaskets for gas service; 1/16 inch thick preformed neoprene bonded to asbestos.

C. Grooved and Shouldered Pipe End Couplings: Malleable iron housing clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; "C" shape composition sealing gasket; steel bolts, nuts, and washers; galvanized couplings for galvanized pipe.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.06 GATE VALVES

A. Up to 2 Inches: Bronze body, bronze trim, non-rising stem, handwheel, inside screw, single wedge or disc, solder or threaded ends.
B. Over 2 Inches: Iron body, bronze trim, non-rising stem, handwheel, OS&Y, single wedge, flanged ends.

2.07 GLOBE VALVES
A. Up to 2 Inches: Bronze body, bronze trim, rising stem and handwheel, inside screw, renewable composition disc, solder or screwed ends, with backseating capacity.

B. Over 2 Inches: Iron body, bronze trim, rising stem, handwheel, OS&Y, plug-type disc, flanged ends, renewable seat and disc.

2.08 BALL VALVES
A. Up to 2 Inches: Bronze one piece body, stainless steel ball, teflon seats and stuffing box ring, lever handle, and balancing stops where required or shown on drawings, solder or threaded ends.

B. Over 2 Inches: Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle, flanged.

2.09 SWING CHECK VALVES
A. Up to 2 Inches: Bronze 45 degree swing disc, solder or screwed ends.

B. Over 2 Inches: Iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.

2.10 SPRING LOADED CHECK VALVES
A. Iron body, bronze trim, stainless steel spring, renewable composition disc, screwed, wafer or flanged ends.

2.11 WATER PRESSURE REDUCING VALVES
A. Up to 2 Inches: Bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded or single union ends.

B. Over 2 Inches: Cast iron body, bronze fitted, elastomer diaphragm and seat disc, flanged.

2.12 RELIEF VALVES
A. Bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labeled.

2.13 SUPPLY STOPS
A. Chrome plated rigid or flexible supply stops with angle valves with threaded inlet connections, wheel type handles, reducers, and escutcheons. Provide new rigid or flexible supply stops to all new fixtures, including kitchen equipment supplied by others.

2.14 AIR CHAMBERS AND SHOCK ARRESTORS
A. Provide air chambers at far end of each hot and cold water supply branch, to each single fixture and group of fixtures. Air chambers shall be full size of branch connection or 1 inch diameter minimum (whichever is the larger) and 18 inches long for single fixtures, with measured distance from tee connection at fixture supply to top of air chamber.

B. In place of air chambers, stainless steel metal bellows type shock arrestors with sealed-in air charge may be used, if approved by Engineer prior to installation. All parts which come in contact with water shall be stainless steel. Shock arrestors shall be sized in accordance with PDI WH-201.
Note that the contractor shall be responsible for installing shock arrestors wherever quick-closing valves or devices are used in the plumbing system, although these shock arrestors may not be explicitly identified and located on the Project Drawings.

**PART 3 EXECUTION**

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
B. Remove scale, oil and dirt, on inside and outside, before assembly.
C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

A. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
B. Route piping in orderly manner and maintain gradient.
C. Install piping to conserve building space and not interfere with use of space.
D. Group piping whenever practical at common elevations.
E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
F. Provide clearance for installation of insulation and access to valves and fittings.
G. Provide access where valves and fittings are not exposed.
H. Slope water piping and arrange to drain at low points.
I. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
J. Prepare pipe, fittings, supports, and accessories not prefinished, ready for finish painting.
K. Establish invert elevations, with slopes for drainage at 1/4 inch per foot minimum for pipe sizes up to 2 1/2" and at 1/8 inch per foot minimum for pipe sizes above 2 1/2". Maintain gradients.
L. Install bell and spigot pipe with bell end upstream.
M. Install valves with stems upright or horizontal, not inverted.
N. Provide one plug cock wrench for every ten plug cocks sized 2 inches and smaller, minimum of one. Provide each plug cock sized 2-1/2 inches and larger with a wrench with set screw.
O. Use lead-free solder and flux for all domestic hot and cold water piping joint connections.
P. Use Type K, one-piece copper piping insulated with 1/2 inch thick flexible closed-cell polyethylene insulation for all water piping which is installed within concrete block walls or buried within the floor slab. Refer to Section 15260 for piping insulation.
Q. Horizontal waste piping branches shall connect to the base of a stack or horizontal stack offset a minimum of ten pipe diameters from the stack in the direction of flow.
R. Do not "bullhead" any piping systems.
S. Install all piping at elevations indicated on Project Drawings. Where no elevations are indicated, install piping as high as possible.

3.03 APPLICATION

A. Use mechanical couplings and fasteners only in accessible locations. Provide adequate clearances for service.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install lead-free bronze male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.

D. Install gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

E. Install globe or ball valves for throttling, bypass, or manual flow control services.

F. Provide spring loaded check valves on discharge of water pumps.

G. Install shock arrestors complete with accessible isolation valve.

H. Do not use PVC piping as part of the building sanitary waste piping system whenever service water temperatures exceed 140 degrees F. Kitchen waste and vent piping shall be cast iron throughout. If not certain whether PVC piping will be acceptable, consult Architect/Engineer prior to submission of bid.

3.04 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verify system is complete, flushed and clean.

B. Ensure PH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

C. The complete piping system, or parts thereof, shall be filled with a water/chlorine solution containing at least 50 mg/l (ppm) of chlorine, and then the piping system, or parts thereof, shall be valved off and allowed to stand for 24 hours.

D. Bleed water from outlets and flush system with clean potable water until chlorine does not remain in the water coming from the system.

E. Take samples no sooner than 24 hours after flushing, from 5 percent of outlets and from water entry, and analyze in accordance with methods prescribed by the health authority having jurisdiction. Repeat the entire procedure if it is shown by a bacteriological examination made by the testing authority that contamination is still present in the system.

3.05 SERVICE CONNECTIONS

A. Provide new sanitary and storm sewer services. Before commencing work check invert elevations required for sewer connections, confirm invert and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

B. Provide new water service, complete with reduced pressure backflow preventer and water meter with by-pass valves. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Caulk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall. Verify main system water pressure from source to new water service, and, where new water service pressure exceeds 80 PSI, also provide line-size pressure reducing valve downstream of new water meter.

END OF SECTION 22 10 00
SECTION 22 14 00
PLUMBING SPECIALTIES

PART 1 GENERAL

1.01 WORK INCLUDED

A. Floor drains.
B. Cleanouts.
C. Backflow preventers.
D. Thermostatic mixing valves.
E. Trap primer valves.

1.02 RELATED WORK

A. Section 22 07 00 - Piping Insulation
B. Section 22 10 00 - Plumbing Piping.
C. Section 22 42 00 - Plumbing Fixtures.

1.03 QUALITY ASSURANCE

A. Manufacturer: For each product specified, provide components by same manufacturer throughout.

PART 2 PRODUCTS

2.01 FLOOR DRAINS

A. Manufacturers: Subject to compliance with requirements provide products by one of the following:
1. Josam Company
3. Tyler Pipe; Wade Div.
4. Zurn Plumbing Products
B. Floor Drains: Existing body & strainer to be replaced in kind with comparable products by above manufacturers.
C. Substitutions: Under provisions of Section 01 60 00.

2.02 CLEANOUTS

A. Manufacturers: Subject to compliance with requirements provide products by one of the
following:
1. Josam Company
3. Tyler Pipe; Wade Div.
4. Zurn Plumbing Products

B. Exterior Surfaced Areas: Round cast nickel bronze access frame and non-skid cover.

C. Exterior Unsurfaced Areas: Line type with lacquered cast iron body and round epoxy coated gasketed cover.

D. Interior Finished Floor Areas: Lacquered cast iron, two piece body with double drainage flange, weep holes, reversible clamping collar, and adjustable nickel-bronze strainer, round with scoriated cover in service areas and round with depressed cover to accept floor finish in finished floor areas.

E. Interior Finished Wall Areas: Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

F. Interior Unfinished Accessible Areas: Calked or threaded type. Provide bolted stack cleanouts on vertical rainwater leaders.

**PART 3 EXECUTION**

**3.01 PREPARATION**

A. Coordinate cutting and forming of floor construction to receive drains to required invert elevations.

**3.02 INSTALLATION AND APPLICATION**

A. Install specialties in accordance with manufacturer's instructions to permit intended performance.

B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.

C. Encase exterior cleanouts in concrete flush with grade.

D. Provide and install a backflow preventer at domestic cold water service entrance to the building. Use double check valve type, unless required to use reduced pressure type by local authority having jurisdiction.

E. Provide and install backflow preventers at cold water makeup connections to boilers and water heaters. Use continuous pressure type for these applications.

F. Provide and install one hose bibb with vacuum breaker in each public toilet room, beneath one public lavatory.

G. Provide and install trap primer valve, complete with 1/2 inch cold water piping connection from trap primer valve to primer connection at trap, for each individual installed floor drain (all types). Install trap primer valves in concealed, accessible locations. Note that trap primers are not indicated on the Project Drawings, but shall be included as part of work scope for all floor drains and floor sinks.

**END OF SECTION 22 14 00**
PONAGANSET HIGH SCHOOL – Bathroom Renovations
North Scituate, Rhode Island

SECTION 22 42 00
PLUMBING FIXTURES

PART 1       GENERAL

1.01       WORK INCLUDED

A. Water closets.
B. Urinals.
C. Lavatories.

1.02       RELATED WORK

A. Section 23 05 29 – Supports and Anchors
B. Section 22 10 00 - Plumbing Piping.
C. Section 22 14 00 - Plumbing Specialties.
D. Related Division 1 Specifications.

1.03       QUALITY ASSURANCE

A. Fixtures: By same manufacturer for each product specified throughout.
B. Trim: By same manufacturer for each product specified throughout.
C. All fixtures and trim shall comply with Federal and State regulations regarding maximum permissible content of lead in these products. More stringent of these requirements shall apply in all cases. It shall be the Contractor's responsibility to verify that the lead content of all fixtures and trim used on this Project comply with all applicable regulations.

1.04       SUBMITTALS

A. Include fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
B. Fixtures submitted for use on the Project, substituted for those fixtures as herein specified, shall be verified by the contractor to have equal or lesser requirements in regard to pressures required for proper fixture operation. Particular attention shall be paid to fixtures with flush valve trim. The contractor shall accept all responsibility for any resulting inadequate operating pressures which result from substitution of fixtures as specified herein.

1.05       OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Division 1 Specifications.
B. Include fixture trim exploded view and replacement parts lists.
1.06 WARRANTY

A. Provide one year warranty.

PART 2 PRODUCTS

2.01 WATER CLOSET (P-2)

A. Bowl: ANSI A112.19.2; floor mounted, vitreous china, siphon jet elongated bowl, 1 1/2 inch spud, china bolt caps, 1.28 gallons per flush; Model K-96057-B manufactured by Kohler.

B. Flush valve: ANSI A112.18.1: exposed chrome plated, diaphragm type with oscillating handle, escutcheon, seat bumper, integral screwdriver stop and vacuum breaker; Model Royal 111-1.28 manufactured by Sloan. WaterSense Certified.

C. Seat: Solid white plastic, open front, extended back, check hinge, brass bolts, without cover; Model K-4731-CA manufactured by Kohler.

D. Substitutions: Under provisions of Section 01 60 00.

2.02 LAVATORY (P-1)

A. Lavatory: ANSI A112.19.2; vitreous china wall mounted/concealed arm carrier lavatory, with drillings on 4 inch centers, front overflow, seal of putty, caulking, or concealed vinyl gasket; Model K-2054-0 manufactured by Kohler.

B. Trim: ANSI A112.18.1; chrome plated combination supply, fitting with open grid strainer, water 3 1/2” Rigid/swing gooseneck Spout, 1.5 GPM aerator, 1 3/4” vandal proof MVP metering push handle 0.20 gallons per cycle, chrome plated 17 gage brass offset drain with cleanout plug and arm with escutcheon; Model 895-E35-665ABCP manufactured by Chicago Faucet. Also furnish with Leonard Model 210-F thermostatic mixing valve, with 1/2 inch hot and cold water inlet connections and 1/2 inch tempered water outlet connection, piped to faucet hot water connection.

C. Wall Mounted Carrier: ANSI A112.6.1; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded fixture studs for fixture hanger, bearing studs;

D. Substitutions: Under provisions of Section 01 60 00

2.03 URINAL (P-3)

A. Urinal: ANSI A112.19.2; vitreous china, wall hung washout urinal with shields, integral trap, removable stainless steel strainer, 3/4 inch top spud, steel supporting hanger; Model K-4991-ET manufactured by Kohler.

B. Flush Valve: ANSI A112.18.1: exposed chrome plated, diaphragm type with oscillating handle, escutcheon, integral screwdriver stop, vacuum breaker, 0.5 gallon per flush; Model Royal 186-0.5 manufactured by Sloan. Water Sense Certified.

C. Wall Mounted Carrier: ANSI A112.6.1; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded fixture studs for fixture hanger, bearing studs;

D. Substitutions: Under provisions of Section 01 60 00

PLUMBING FIXTURES 22 42 00-2
PART 3 EXECUTION

3.01 INSPECTION
   A. Review millwork shop drawings as applicable. Confirm location and size of fixtures and openings before rough-in and installation.
   B. Verify adjacent construction is ready to receive rough-in work of this Section.

3.02 INSTALLATION
   A. Install each fixture with trap, easily removable for servicing and cleaning.
   B. Provide chrome plated rigid or flexible supplies to all fixtures, with angle valves with wheel handles or loose key locking shield handles, screwdriver stops, reducers, and escutcheons.
   C. Install components level and plumb.
   D. Install and secure fixtures in place with wall supports, wall carriers and bolts.
   E. Seal fixtures to wall and floor surfaces with sealant.
   F. Cover all exposed waste and water piping beneath handicapped use lavatories and sinks with form-fitted vinyl plastisol insulation, equal to Brocar Products "Trap Wrap".

3.03 ADJUSTING AND CLEANING
   A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.
   B. At completion clean plumbing fixtures and equipment.
   C. Solidly attach water closets to floor with lag screws. Lead flashing is not intended to hold fixture in place.

END OF SECTION 22 42 00
SECTION 23 00 00
BASIC MECHANICAL REQUIREMENTS

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<td>A. Basic Mechanical Requirements specifically applicable to Division 23 00 00 Sections, in addition to Division 1 - General Requirements.</td>
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<tr>
<td>1.02</td>
<td>WORK SEQUENCE</td>
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<tr>
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<td>A. Install work in phases to accommodate Owner's occupancy requirements during the construction period. Coordinate mechanical schedule and operations with Architect/Engineer.</td>
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<td>1.03</td>
<td>ALTERNATES</td>
</tr>
<tr>
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<td>A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.</td>
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<tr>
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<td>B. Coordinate related work and modify surrounding work as required.</td>
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<td>C. Schedule of Alternates - see Division 1 Specifications.</td>
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<td>1.04</td>
<td>SUBMITTALS</td>
</tr>
<tr>
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<td>A. Submit under provisions of Division 1 Specifications. Provide submittals, including specifications, design data, and calculations (as required) for all equipment and materials relating to Division 23 00 00 Specifications which are proposed for use on the project. No work will be allowed to proceed until the Architect/Engineer's submittal review is completed.</td>
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<td>B. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal.</td>
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<td></td>
<td>C. Mark dimensions and values in units to match those specified.</td>
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<td>D. Products which are submitted for use on the Project must be equal in quality, performance and serviceability to the products as shown on the Project Drawings and Specifications, including any accessories as noted or specified. It shall be the mechanical contractor's responsibility to verify product equality to the Architect/Engineer's satisfaction before substitution of products will be allowed. If requested, the contractor shall furnish samples of any submitted equipment and materials for general inspection to check for conformity with the requirements of the Specifications.</td>
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<td>E. Where the contractor proposes to use items and equipment other than those specified and/or detailed on the Project Drawings, which may require any redesign of the structure, partitions, foundation, piping, wiring, or any other parts of the mechanical, electrical, and/or architectural layouts, all such required redesign, including new drawings and detailing necessary, shall be prepared by the contractor at the contractor's expense, and shall be approved by the Architect/Engineer.</td>
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</tbody>
</table>
F. The mechanical contractor shall prepare and submit As-Built drawings of all systems and equipment at the completion of all systems installation. These drawings shall be provided to the Architect/Engineer for review and approval. Any deviations from the original Project Drawings shall be so noted.

G. If requested, the mechanical contractor shall submit a schedule of values, reflecting reasonable and true line item costs, to the Architect/Engineer as part of the Project records. This schedule of values will be submitted prior to the start of construction.

1.05 REGULATORY REQUIREMENTS

A. Obtain permits, and request inspections from authorities having jurisdiction. All permits, inclusive of their associated costs, are the responsibility of the contractor who performs the related work. The contractor shall verify availability of utility services, including water and natural gas pressures required, invert elevations for connection to sanitary waste systems, etc., and obtain authorization and approval from the respective utility for connections as required for this Project. Any fees required by the respective utilities for installation and connection to these services shall be the responsibility of the contractor. Satisfactory proof of final inspection and approval by all authorities having jurisdiction shall be presented to the Architect/Engineer before work is accepted.

B. All materials and equipment shall be designed, constructed, installed and tested in strict accordance with these specifications and the latest editions of all of the following applicable standards:

- Rhode Island State Building Code (RISBC)
- National Environmental System Contractors Assoc. (NESCA)
- American Society of Mechanical Engineers (ASME)
- American Society of Testing Materials (ASTM)
- National Electric Code (NEC)
- National Fire Code (NFC)
- National Fire Protection Association (NFPA)
- Underwriters Laboratories, Inc. (UL)
- National Electrical Manufacturers Association (NEMA)
- Occupational Health and Safety Act (OSHA)
- Air Conditioning and Refrigeration Inst. (ARI)
- Air Moving and Conditioning Association (AMCA)
- American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
- National Sanitation Foundation (NSF)
- Rhode Island Department of Health (RIDH)
- Environmental Protection Agency (EPA)
- Building Officials Conference of America (BOCA)
- Federal Construction Safety Standards (FCSS)
- American Gas Association (AGA)
- Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
- All applicable local ordinances and codes

C. The above listed codes and standards shall be followed as minimum requirements and shall not relieve the mechanical contractor from any additional requirements as indicated on the Project Drawings or as herein specified. Where provisions of pertinent codes and standards conflict with Division 23 00 00 Specifications, the more stringent provisions shall govern and shall be conformed to.

D. Any materials or workmanship called for in the above referenced requirements not specified or shown on the Drawings shall be furnished and installed by the contractor as though same had been specifically indicated or mentioned. Any work installed in conflict with these requirements shall become the sole responsibility of the contractor, who shall assume the expense to rectify the installation to the Architect/Engineer's satisfaction.

E. The contractor shall notify the Architect/Engineer of any deviations from the above referenced requirements pertaining to work indicated or specified before the installation of this work is affected.
F. The contractor is strongly urged to visit jobsite and review existing conditions which may affect contractor’s work, prior to submission of bid. Contractor shall be advised that no extra compensation will be provided for any additional work required to be done to provide complete functional systems, if a site review would have identified the necessity for the additional work. This condition will be strictly conformed to, even if all required work is not explicitly indicated on the Project Drawings.

1.06 PROJECT/SITE CONDITIONS

A. Install Work in locations shown on Drawings, unless prevented by Project conditions. As the drawings are diagrammatic and approximate, unless fixed by dimensions, actual field conditions shall govern the exact location of ductwork and piping installation locations. Do not scale Drawings for exact locations. Maintain all required clearances from and around all new and existing mechanical and electrical equipment and apparatus, as noted in equipment or apparatus manufacturer's installation requirements or applicable standards and codes.

B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect/Engineer before proceeding. No additional compensation will be allowed for these changes as required by Project conditions.

C. It shall be the contractor's responsibility to review all Project Drawings which may affect the location of any equipment and apparatus installation locations and/or permit full coordination of work with other trades. The right to make any reasonable change in location of apparatus and equipment up to the time of rough-in is reserved by the Architect/Engineer. Such changes shall be made without additional expense to the Owner.

1.07 SEQUENCING AND SCHEDULING

A. Construct Work in sequence under provisions of Division 1 Specifications.

1.08 TESTING, ADJUSTING AND BALANCING

A. The general contractor shall be responsible for providing the services of an AABC or NEBB certified testing, adjusting and balancing firm. This balancing firm shall be responsible for testing, adjusting and balancing all systems and equipment to the satisfaction of the Architect/Engineer. This work shall be performed by a balancing firm that is not directly or indirectly employed by the mechanical contractor.

B. All required tests shall be made in the presence of the Architect/Engineer, or their representatives.

1.09 SPECIFIC REQUIREMENTS

A. Only the latest editions and revisions of standards and codes referenced in Division 23 00 00 Specifications shall apply to the work.

B. The Specifications and Project Drawings are complementary, one to the other. Any items mentioned or called for by one shall be considered as being indicated in both the Specifications and the Project Drawings.

C. The contractor shall provide all labor, materials, tools and equipment required for complete and satisfactory installation.

D. All materials and equipment shall be delivered to the job site wrapped in protective covering, and shall be stored in a clean, dry location free from dust and water, in such a manner to permit easy access for inspection and handling. Damaged items shall be replaced at no additional cost to the Owner. Any items subject to moisture or condensation shall be completely replaced at no additional cost to the Owner.

E. The mechanical contractor shall be responsible for providing starters and disconnects for all equipment specified under Division 23 00 00 Specifications, unless explicitly stated otherwise. Starters shall be Cutler Hammer or equal with push buttons, HAND-OFF-AUTO switches, overload and low voltage...
protection, and auxiliary contacts as required by operational sequences as specified in Section 23 00 00. Starters for three-phase motors shall be magnetic type, unless stated otherwise. When automatic or interlocking control of single phase motors is required, provide with magnetic starters. Manually controlled single-phase motors shall be provided with two-pole manual thermal switch. Starters and disconnects for outdoor use shall be of weatherproof type (NEMA Type 3R).

1.10 DEFINITIONS

A. "Contractor" means specifically sub-contractor working under his respective section of specifications.

B. "Furnish" and/or "Provide" means to supply, erect, install and connect up complete in readiness for regular operation, particular work referred to, unless otherwise specified.

C. "Piping" includes in addition to pipe, all fittings, valves, hangers and other accessories relating to such piping.

D. "Ductwork" includes in addition to pipe, all fittings, valves, hangers and other accessories relating to such piping.

E. "Concealed" means hidden from view, in chases, walls or underground.

F. "Exposed" means not installed underground, or concealed as defined above.

G. "Supply" means purchase and delivery of material to the site.

H. "Install" means to erect in place the supplied item.

1.11 GUARANTEE

A. The mechanical contractor shall guarantee, in writing, the quality of all materials, equipment and workmanship furnished and installed by the mechanical contractor for a period of one year from the date of final acceptance of this installation by the Owner, and shall replace any defective apparatus, material and equipment at the mechanical contractor's expense. This guarantee shall be endorsed and shall be submitted to the Owner by the General Contractor.

PART 2 PRODUCTS

As noted on Construction Documents

PART 3 EXECUTIONS

Not Used

END OF SECTION 23 00 00
SECTION 23 05 29
SUPPORTS AND ANCHORS

PART 1   GENERAL

1.01 WORK INCLUDED

A. Pipe, duct, and equipment hangers, supports, and associated anchors.
B. Sleeves and seals.
C. Flashing and sealing equipment and pipe stacks.

1.02 RELATED WORK

A. Section 22 07 00 - Piping Insulation.
B. Section 22 10 00 - Plumbing Piping.

PART 2   PRODUCTS

2.01 PIPE HANGERS AND SUPPORTS

A. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch: Malleable iron, adjustable swivel, split ring.
B. Hangers for Pipe Sizes 2 to 4 Inches and Cold Pipe Sizes 6 Inches and Over: Carbon steel, adjustable, clevis.
C. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods; cast iron roll and stand for hot pipe sizes 6 inches and over.
D. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
E. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp; adjustable steel yoke and cast iron roll for hot pipe sizes 6 inches and over.
F. Vertical Support: Steel riser clamp.
G. Floor Support for Pipe Sizes to 4 Inches and All Cold Pipe Sizes: Cast iron adjustable pipe saddle, locknut nipple, floor flange, and concrete pier or steel support.
H. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
I. Shield for Insulated Piping 2 Inches and Smaller: 18 gage galvanized steel shield over insulation in 180 degree segments, minimum 12 inches long at pipe support.
J. Shield for Insulated Piping 2-1/2 Inches and Larger (Except Cold Water Piping): Pipe covering protective saddles.
K. Shields for Insulated Cold Water Piping 2-1/2 Inches and Larger: Hard block non-conducting saddles in 90 degree segments, 12 inch minimum length, block thickness same as insulation thickness.

L. Shields for Vertical Copper Pipe Risers: Sheet lead.

2.02 HANGER RODS

A. Steel Hanger Rods: Threaded both ends, threaded one end, or continuous threaded.

2.03 INSERTS

A. 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.

2.04 FLASHING

A. Metal Flashing: 26 gage galvanized steel.

B. Lead Flashing: 5 lb/sq ft sheet lead for waterproofing; one lb/sq ft sheet lead for soundproofing.

C. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.

D. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.05 SLEEVES

A. Sleeves for Pipes Through Non-fire Rated Floors: Form with 18 gage galvanized steel.

B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Form with steel pipe or 18 gage galvanized steel.

C. Sleeves for Domestic Hot and Cold Water Piping, Fire Protection System Piping, Cast Iron, PVC and Copper DWV Piping, Electrical and Communications Conduit Through Fire Rated and Fire Resisitve Floors and Walls: Prefabricated fire rated sleeves. All openings shall have been tested and approved by UL. Utilize proper rated penetrations equal to or greater than the barrier assembly at which the penetration occur.

D. Sleeves for Round Ductwork: Form with galvanized steel.

E. Sleeves for Rectangular Ductwork: Form with galvanized steel.

2.06 FABRICATION

A. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

B. Design hangers without disengagement of supported pipe.

C. Provide copper plated hangers and supports for copper piping.

2.07 FINISH

A. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
PART 3 EXECUTION

3.1 INSERTS

A. Provide inserts to for placement in concrete formwork.

B. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.

D. Where concrete slabs form finished ceiling, provide inserts to be flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide thru-bolt with recessed square steel plate and nut flush with top of slab.

3.02 PIPE HANGERS AND SUPPORTS

A. Support horizontal piping as follows:

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>MAX. HANGER SPACING</th>
<th>HANGER DIAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 to 1-1/4 inch</td>
<td>4'-0&quot;</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>1-1/2 to 2 inch</td>
<td>4'-0&quot;</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>2-1/2 to 3 inch</td>
<td>4'-0&quot;</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>4 inch</td>
<td>4'-0&quot;</td>
<td>5/8&quot;</td>
</tr>
<tr>
<td>6 inch</td>
<td>4'-0&quot;</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>PVC (All Sizes)</td>
<td>4'-0&quot;</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>C.I. Bell and Spigot</td>
<td>4'-0&quot;</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>(or No-Hub)</td>
<td>and at joints</td>
<td></td>
</tr>
</tbody>
</table>

B. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.

C. Place a hanger within 12 inches of each horizontal elbow.

D. Use hangers with 1-1/2 inch minimum vertical adjustment.

E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.

F. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.

G. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

H. Support riser piping independently of connected horizontal piping.

I. Provide rigid support sway bracing (restraints) and hanger rod stiffeners on all vertical risers and horizontal piping runs at changes in direction 45 degrees or greater, for all pipe sizes 4 inch diameter and larger. Restraints shall be equal to B-Line B22 channel with B335-2 adjustable hinges; hanger rod stiffeners shall be equal to B-Line B22 channel with SC228 or SC-UB rod stiffener assembly.
J. Provide piping restraints as follows:

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>MAX. TRANSVERSE SPACING</th>
<th>MAX. LONGITUDINAL SPACING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>14'-0&quot;</td>
<td>28'-0&quot;</td>
</tr>
<tr>
<td>1-1/4 inch</td>
<td>16'-0&quot;</td>
<td>32'-0&quot;</td>
</tr>
<tr>
<td>1-1/2 inch</td>
<td>18'-0&quot;</td>
<td>36'-0&quot;</td>
</tr>
<tr>
<td>2 inch</td>
<td>20'-0&quot;</td>
<td>40'-0&quot;</td>
</tr>
<tr>
<td>2-1/2 inch</td>
<td>22'-0&quot;</td>
<td>44'-0&quot;</td>
</tr>
<tr>
<td>3 inch</td>
<td>24'-0&quot;</td>
<td>48'-0&quot;</td>
</tr>
<tr>
<td>4 inch</td>
<td>28'-0&quot;</td>
<td>56'-0&quot;</td>
</tr>
<tr>
<td>6 inch</td>
<td>34'-0&quot;</td>
<td>68'-0&quot;</td>
</tr>
</tbody>
</table>

K. All piping shall be supported independently from the building structure. In no circumstance will supports and/or hangers be allowed to be attached from adjacent piping.

3.03 FLASHING

A. Provide flexible flashing and metal counterflashing where piping penetrates weather or waterproofed walls, floors, and roofs.

B. Flash vent and soil pipes projecting 3 inches minimum above finished roof surface with lead worked one inch minimum into hub, 8 inches minimum clear on sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counterflash and seal.

C. Flash floor drains in floors with topping over finished areas with lead, 10 inches clear on sides with minimum 36 x 36 inch sheet size. Fasten flashing to drain clamp device.

D. Seal all drains, cleanouts, and all other floor and/or roof penetrations watertight to adjacent materials.

3.04 SLEEVES

A. Set sleeves in position in formwork. Provide reinforcing around sleeves.

B. Extend sleeves through floors one inch above finished floor level. Caulk sleeves full depth and provide floor plate.

C. Where piping, conduit or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk seal air tight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

D. Install chrome plated steel escutcheons at finished surfaces.

E. All firestopping and waterproofing devices installed at penetrations and openings through fire resistive walls and floors shall be in strict accordance with manufacturer's instructions.

END OF SECTION 23 05 29
SECTION 26 00 00
ELECTRICAL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

The General Conditions of the Contract for Construction including Supplementary Conditions and General Requirements shall apply fully to the work specified in this section and to all work specified under all sections of Electrical. Examine all other sections of the specifications and drawings for any alternates that may affect this section. Examine all other sections of the specifications and drawings for work to be performed in connection therewith.

1.02 DESCRIPTION OF WORK

The work to be provided under this section shall include, but not necessarily be limited to all complete and operational electrical systems and items in accordance with these specifications and the accompanying drawings. Provide all supervision, labor, materials, equipment, machinery and any and all other items necessary, but not limited to, completing the following systems:

A. Lighting, including fixtures and lamps.
B. Equipment connections.
C. Emergency lighting, wiring, accessories and controls.
D. Fire alarm system.
E. Removal of existing electrical wiring, equipment and devices.
F. Miscellaneous outlets and wiring.
G. Occupancy Sensors

All items of equipment are specified in the singular, however, the Contractor shall provide and install the number of items of equipment as indicated on the drawings and as required for complete systems.

With submission of bid, give written notice to the Architect of any materials or apparatus believed inadequate or unsuitable, in violation of laws, ordinances, rules, and any necessary items or work omitted. In the absence of such written notice, it is mutually agreed that the Contractor has included the cost of all required items in his proposal, and that he will be responsible for the approved satisfactory functioning of all systems, equipment and devices without extra compensation.

It is the Electrical Contractors responsibility to verify all conditions relating to equipment dimensions and locations. Any and all construction methods required due to low ceilings in equipment locations, obstructions, routing of conduit/wiring runs in or around the structure, obstructions which have to be overcome, etc. are the responsibility of the Electrical Contractor. All equipment locations on the drawings are diagrammatic, exact and final locations shall be determined and coordinated in the field by this Contractor. The electrical contractor is responsible for all field conditions and shall include such in his bid.

All electrical equipment and components furnished by other sections of the specifications and delivered for installation under this section of the specifications shall be clearly marked for location. The section supplying the equipment and components shall be responsible for all required tests after the electrical connections are completed.
1.03 ADDITIONAL WORK UNDER THIS SECTION

The following items of work shall be provided under THIS section of the specifications and drawings.

All wooden mounting boards, PAINTED BY THE ELECTRICAL CONTRACTOR with two coats of GRAY fire retardant paint, where required and called for. Wooden mounting boards shall be provided for all surface mounted panelboards, for main service equipment, telephone service board and other locations for mounting of equipment. Minimum thickness of plywood backboards shall be (3/4”) three quarters of an inch and THERE SHALL BE (1) ONE FINISHED SIDE for the equipment. Where required due to obstructions and conditions backboards shall be installed on standoffs of unistrut, blocking or other suitable means to provide required and desired final locations of panelboards, etc. in cases where they can not be mounted directly to walls. Plywood shall be grade APA C-D PLUGGED EXPOSURE 1.

Panelboards may be mounted on unistrut supports in lieu of wooden backboards. Where required, unistrut shall be mounted from floor to ceiling and secured to both surfaces if the panelboard has to be mounted away from walls to avoid obstructions. All conduits and/or wireways shall be racked on unistrut up wall.

Cutting and patching as applicable to this section of the specification.

Installation of fireproofing material in and around all sleeves, at fire rated wall and floor penetrations and other areas as required by the Building and Electric Codes.

1.04 DEFINITIONS

The word “provide” is defined to mean “furnish and install complete with all accessories.”

The word “wiring” is defined to mean “wire installed in raceway or surface metal raceway including boxes and fittings” and/or Metal Clad Cable and/or as defined in other portions of this section of the specifications.

The word “contractor” or “this contractor” is defined as the electrical contractor.

The words “by others” are defined to mean “not by this division but by another division of the contract documents.”

The word “equal” is defined to mean “to posses the same performance qualities and characteristics and fulfill the utilitarian function without any decrease in quality, durability and longevity.”

The words “satisfactory operation” is defined to mean “operation as specified.”

“UL” is defined to mean “Underwriters Laboratories Inc.”.

“R.S.C.” or “RSC” is defined to mean threaded thick-walled rigid galvanized steel conduit. “E.M.T. or EMT is defined to mean electric metallic tubing (thin walled steel conduit).

1.05 INTENT

It is the intent to cover all work and materials necessary for installing complete, ready for continuous use, all electrical systems as shown on the accompanying drawings, or as hereinafter described.

In the event that there is a conflict on the drawings, between the drawings and the specifications or within the specifications, the most stringent requirements with the highest cost and value shall be carried in the bid. Upon award of the contract the electrical contractor shall ask for a review of the conflict for a formal interpretation.

Sizes of conduit/wiring and running of it may be shown but it is not intended to show every offset and fitting, nor every structural difficulty that will be encountered during the installation of the work. If the alignment of the conduit/wiring has to be varied from that shown on the drawings, where necessary because of slight architectural changes, structural or Architectural conditions or to avoid the work of other trades, it shall be done without extra expense to the Owner. It is the Contractors responsibility to coordinate and layout the building wiring system to suit field conditions. Provide all necessary fittings, J.B.’s, etc. as required. Where wiring is not indicated the Contractor is responsible for correctly wiring the equipment, lighting, devices, etc. in accordance with the Electric Code and
other sections of this specification. Circuit numbers are indicated to show the intent of the wiring system and to indicate the limit of the number of items per circuit.

This Contractor is responsible to examine the Architectural, Structural and other drawings, and investigate field conditions, in order to determine any height restrictions, structural difficulties, etc. which may be encountered and include the cost of overcoming same in the bid for any and all required equipment, fittings and construction methods necessary to install the equipment in the general locations indicated on the drawings. In instances where equipment can not be installed where indicated on the drawings the Contractor shall contact the Engineer, prior to construction in order to review other possible locations.

1.06 LEGAL AUTHORITIES, CODES AND REGULATIONS

Where the term “Electric Code” or “Code” is used in this section of the specifications and drawings, it shall mean the MOST current published edition of the National Electric Code and the latest edition of the State Electric Code. In addition all work pertaining to Life Safety System shall be done in accordance with the Life Safety Code NFPA 101 - most current published edition, NFPA 72 Fire Codes and all other applicable NFPA Standards. All controls, signage, systems, equipment, etc. shall conform to the requirements of “ADA”, “UFAS” and all other applicable civil laws and codes pertaining to the handicap.

All work shall be executed in accordance with the Electric Code, State Building and Fire Safety Codes, Federal, State and Local Rules and Regulations each Authority having jurisdiction enforces. Also, inspection forms, permits and approvals required for this section of work shall be obtained and all associated fees and charges required by all Authorities and Utility Companies, shall be included in this section of work.

1.07 COOPERATION AND COORDINATION

Cooperate and coordinate with all work of other divisions of the contract documents in executing the work of this division. Refer to other sections of the contract documents for the location of equipment in relation to this work. Coordinate all work of the Utility Companies (electric and telephone and cable TV) required in this project.

1.08 QUALITY ASSURANCE

For the actual fabrication, installation and testing of the work of this section use only thoroughly trained and experienced personnel who are completely familiar with the requirements for the work and with the installation recommendations of the manufacturers of the specified items.

In acceptance or rejection of installed electrical work, no allowance will be made for lack of skill on the part of the installers. Retain the services of a foreman who shall be in attendance at the project site during the progress of the work. The foreman assigned to the project at the start of construction shall remain until construction completion, unless circumstances arise which necessitate a replacement foreman - the Engineer and Architect shall be notified in advance of any change of foremen during the project.

All material shall be new and shall conform to requirements of, and be listed by, the Underwriters’ Laboratories, Inc., or Factory Mutual, for that which standards have been established.

Industrial standards pertinent to electrical work being installed shall be considered minimum requirements, over and above those required by federal, state, and local Authorities.

It is this Contractors responsibility to check and verify all electrical equipment and components for correct characteristics that are provided from other sections of the specifications for installation under this section such as starters, fan speed control switches, etc.

Storage of equipment such as switches, fixtures, panelboards, wire, etc. is not to remain outside, exposed to weather, in damp locations, but shall be stored in warm, dry, safe storage until ready for use.

This Contractor shall be responsible for their workers to protect all walls, floors, ceilings, including existing, and other work installed under other sections of the specifications while installing this work, and protect this work from damage during and after installation and deliver clean and in first class condition. Repair or replace any of this work.
or work of other sections of the specifications damaged by workmen employed under this section, without causing additional costs to the owner.

1.09  TEST AND MAINTENANCE

Apply such tests as to insure the proper and desired operation of all electrical equipment, controls and wiring after all electrical materials and equipment are in place and connected. Replace all defective work and adjust such systems as the Architect shall direct or as required for proper and satisfactory operation. All meters, equipment and tools used for testing shall be provided under this section of the specifications. Instruct in use of all systems and apparatus, such persons as the Owner shall designate.

Tests for systems such as Fire Alarm System, Emergency Lighting System, Sound, Hearing Impaired, Emergency Generator, Computer/Wiring System, Telephone System, Internal Communications Systems, and others where specified, shall be made in the presence of the manufacturer’s representative and the Owner when applicable. The Architect and Engineer shall be notified a minimum of two (2) weeks in advance of all preliminary and final testing of all systems. Upon completion of satisfactory tests, a separate report of each system shall be submitted to the Architect for review, comment and/or approval.

Operate each circuit breaker in each panelboard in the presence of the Owner and/or Owners Maintenance crew/Representative (other than the Architect) to indicate accuracy and completeness of the panelboard schedules. During the final observation of the project a random sampling of the circuit breakers will be taken by the Engineer and/or OWNER. If the schedules prove to be inaccurate from the random selection The Electrical Contractor shall make all necessary corrections to the panelboard schedules, and the Electrical Contractor shall reimburse the Engineer for all time spent during this review process at the Engineers standard hourly rates, without additional cost to the Owner or the Project - a retainer fee will be required prior to the site visit.

1.10  GUARANTEES AND WARRANTIES

Guarantee all material, equipment, labor and systems as required by the General Conditions, Supplementary Conditions and General Requirements of the Contract for Construction and thereafter as per common law. Minimum Guarantees and Warranties for basic materials and labor shall not be less than a period of one year from date of project completion and acceptance by the Owner, Architect and Engineer. Guarantees and Warranties in excess of one year by the equipment suppliers shall be in effect for their entire duration.

Upon determination that work covered by Warranty has failed, replace or rebuild the work to an acceptable condition complying with the requirements of the Contract Documents. The Electrical Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the Owner has benefited from use of the work through a portion of its anticipated useful life (labor and material cost). Refer to other portions and sections of the specifications for additional requirements.

See other portions and sections of the specifications for additional systems and equipment that require a guarantee or warrantee that is longer than one year.

1.11  OPERATING AND MAINTENANCE MANUALS

At the completion of the project, furnish for delivery to the Owner, at no additional cost, two (2) bound sets of operating and maintenance manuals. These manuals shall include manufacturer’s data, maintenance requirements, shop drawings, installed equipment catalog cuts, wiring device catalog data sheets, and operating instructions on all electrical equipment installed, including lighting fixtures with lamp sizes clearly indicated.

Also include the names, addresses and telephone numbers of repair and service companies for each of the major systems installed under this section and the telephone number of this Contractor including a 24 hour telephone number for emergency calls.

1.12  DRAWINGS

The accompanying drawings are intended to be supplementary to the specifications but any work indicated, mentioned or implied in either, is to be considered as specified in both.
All work shown on the drawings is intended to be approximately correct to scale, but detailed drawings, calculated and measured dimensions are to be followed in all cases. The Electrical Contractor shall check locations of all equipment and check dimensions with the proposed locations so all obstacles to be overcome will be figured into the bid. Refer to Architectural, Structural, Mechanical, Fire Protection, Plumbing, and other contract drawings for building construction details and dimensions. Refer to Architectural reflected ceiling plans, when available, for exact locations of lighting fixtures. If this Contractor finds a conflict with equipment locations notify the Engineer immediately. The electrical contractor is responsible for all field conditions and shall include such in his bid.

The electrical systems and equipment layouts are generally diagrammatic, exact and final locations shall be determined and coordinated in the field by this Contractor. In most cases equipment circuitry is indicated by panelboard designation and circuit number. It is this Contractor’s responsibility to wire the system in accordance with the National Electric Code. No more than (4) Four current carrying conductors (excluding the ground conductors) shall be installed in any raceway or cable assembly - see other portions of the specifications. The routing of wiring, in some cases is indicated, but it is not intended to show every offset and fitting, nor every structural difficulty or obstacle that will be encountered during the installation of the work. If the alignment of conduit has to be varied from that shown on the drawings, where necessary on account of slight architectural changes, structural conditions, field conditions, space restrictions or to avoid the work of any other trades, it shall be done without extra expense to the Owner. Provide all necessary equipment, fittings, L.B.’s, Junction Boxes, Wireways, etc. which are required to overcome space restrictions, special construction, obstacles, height restrictions, etc.

The work outlined on these drawings is subject to actual field conditions.

In the event that the drawings or specifications are revised to indicate changes in the work, either by sketch or written form, this Contractor shall evaluate changes promptly. Before installation of any item or performance of any work indicated by revisions this Contractor shall notify, in accordance with other sections of the specification, of any addition or deduction to the Contract Price. Contractor shall not proceed with changes without proper authorization. All changes to the Contract Price shall have the following information forwarded: Each different item of material itemized as line items with unit costs including Quantities listed as Each, L.F. (lineal foot), CLF (hundred lineal feet) or other accepted abbreviations, and cost extensions for both material and labor charges and the hourly rate of labor. Lists which only indicate the items as “material” and “labor” without a breakdown of each item of material with associated labor cost will not be acceptable. If the Electrical Contractor fails to provide the information in the requested format and the electrical engineer is required to do a partial or full estimate (formal or informal) the electrical contractor will be responsible for compensating the electrical engineer for all time spent estimating the revisions to verify pricing at the engineers standard hourly rates.

1.13 RECORD DRAWINGS

Maintain accurate records of all deviations in work as actually installed from work indicated on the drawings. On completion of the project, two (2) complete sets of marked-up prints shall be delivered to the Architect.

1.14 MATERIAL AND EQUIPMENT SCHEDULES

Within 10 days after date of award of contract and before any materials, fixtures, devices or equipment are purchased, submit in writing to the Architect, a complete list in triplicate, of specified materials, fixtures, devices and equipment to be incorporated in the work. After one copy of this list is returned showing items approved or rejected, submit within 15 days catalog numbers, cuts, diagrams, drawings and such other descriptive data as outlined in the specifications.

Substitutions will not be accepted on Fire Alarm, Lighting, emergency lighting, sound system, hearing impaired system, and other items of equipment which are designated as “shall be as manufactured by...”, or do not have the designation “or equivalent”.

No consideration will be given to partial lists submitted from time to time. Approval of materials shall be based on manufacturer’s published ratings and data. Any materials, fixtures, devices and equipment listed that are not in accordance with specified requirements may be rejected. Upon expiration of the above specified period (for submitting or subsequent data submission) or any authorized extension thereof, the Contractor fails to submit the list as specified above, the Engineer will select a complete line of materials, fixtures, devices and equipment and this
selection shall be final and binding and all items shall be furnished and installed without change in contract price or time of completion.

If the Electrical Contractor submits a substitution all time spent will be billed to the Electrical Contractor at the Engineers hourly rates, with no additional cost to the Owner or Project. All costs for all labor and miscellaneous expenses arising from comparisons of substitute equipment, including any and all meetings requested or required, will be billed to the Electrical Contractor, with no additional cost to the project or the Owner.

With substitute equipment submission the Electrical Contractor shall provide a letter of agreement that the equipment will be replaced at no additional cost if in the opinion of the Engineer the equipment is unsatisfactory in its performance. Shop drawings will not be processed without this letter and will be returned with no action taken. The Contractor assumes all repercussions of the project schedule in relation to this requirement.

It is the Contractors responsibility to meet the entire intent of the specifications. Deviations from the specified items shall be at the risk of the Contractor until the date of final acceptance by the Engineer. Approved submittals on substitute equipment shall only allow the Contractor to proceed with installing a substituted item and said item shall not be considered equal until such time as the Engineer has completely accepted the substituted item. All cost for removal, relocation or replacement of a substituted item shall be at the risk of and completely paid for, including all costs for all labor and miscellaneous expenses arising from comparisons of substitute equipment, including any and all meetings requested or required, and all costs for all labor and miscellaneous expenses arising from comparisons of substitute equipment, including any and all meetings required.

### 1.15 UTILITY COMPANY REBATES

ANY AND ALL UTILITY COMPANY REBATES FOR ALL ELIGIBLE ENERGY EFFICIENT LIGHTING, BALLAST, LAMPS, OCCUPANCY SENSORS, LED EXIT SIGNS, ETC. SHALL BE PAID DIRECTLY TO THE OWNER. THE CONTRACTOR SHALL NOT RECEIVE THE REBATE OR DEDUCT THE AMOUNT FROM HIS BID IN ANTICIPATION OF A REBATE.

### 1.16 EQUIPMENT IDENTIFICATION

Identify each item of equipment, including panelboards, switchboards and cabinets 12 inch square and larger, disconnect switches and starters furnished by this division or any other division of the specification, Fire Alarm Control Panel Zones and separate fire alarm system cabinets and junction boxes 6 inch square and larger, and other equipment as designated on the drawings or elsewhere in this specification, including existing equipment where called for. Identifications shall be by a permanently attached nameplate (secured with screws or rivets, with sharp edges filed smooth) made of a black surface, white core, laminated bakelite with engraved letters. Fire Alarm System nameplates shall be red with white core. Nameplates shall be minimum of 3” long by 1-1/2” wide and shall bear the equipment name. All nameplates shall be secured with screws, adhesive back will not be accepted. ALL NAMEPLATES SHALL BE SECURED WITH SCREWS OR RIVETS, WITH ALL SHARP EDGES FILED SMOOTH, TO THE EQUIPMENT, ADHESIVE BACK NAMEPLATES WILL NOT BE ACCEPTED AND WILL BE REPLACED AT THIS CONTRACTORS EXPENSE.

Provide typed directories under clear plastic, in directory card holders, in each panelboard, showing the utilization of each circuit. When panelboards are doorless (Power panelboards) the Contractor shall provide screw mounted lamacoid nameplates indicating the utilization of each circuit. The directory shall indicate the circuit number, equipment served and the area/location of the equipment. Area/location designations shall be as designated on the Architectural drawing(s), (i.e. c.b. #1: lighting room 101, c.b. #6: receptacles room 101, 102). OR Area/location designations shall be as designated by the Owners representative, (i.e. c.b. #1: lighting, Office #1 Room 10, c.b. #6: receptacles Lounge). Area designations shall be reviewed with the Owners representatives so all areas are identified as understood by the personnel. This Contractor shall mark up a print with the Owners room/area designations and use these designations in the panelboard schedule.

As part of the base bid the Contractor shall operate all existing branch circuit breakers in all existing panelboards to identify the equipment and/or load served. All existing panelboards shall have an updated schedule installed in them which shall indicate all the new work and additions to the panel and all existing loads on existing circuit breakers not affected by the new work. Directory information shall be the same format as indicated in the previous paragraph. Directory card holders shall be installed in existing panels if there is not one existing. Coordinate this work with the Owners representative so as not to interfere with the operation of the facility.
Once the work has been completed the Contractor shall operate all circuit breakers in all panelboards, new and existing, in the presence of the Owner and/or their designated personnel to show correctness of the new panelboard schedules.

1.16 EXISTING CONDITIONS AND CONSTRUCTION SITE AND BUILDING CONDITIONS

Visit the project site, prior to bidding, and be thoroughly acquainted with the provisions of the contract documents and all surrounding conditions with reference to the various phases of work to be performed. Failure to do so shall not be justification for relief from responsibility of performing the work necessary for a complete and proper installation.

It is the Electrical Contractors responsibility to verify all conditions relating to equipment dimensions and locations. Any and all construction methods required due to low ceilings in equipment locations, obstructions, routing of conduit/wiring runs in or around the structure, obstructions which have to be overcome, etc. are the responsibility of the Electrical Contractor. All equipment locations on the drawings are diagrammatic, exact and final locations shall be determined and coordinated in the field by this Contractor. The electrical contractor is responsible for all field conditions and shall include such in his bid.

Remove such existing accessories and equipment as directed in the work area, in areas to be demolished or applicable to new work and required under the work. All salvaged-surplus material, which the Owner has requested to keep, is to remain his property and shall be stored on the site, by this Contractor, where directed. All other salvaged or surplus material shall become the property of this Contractor and shall be promptly removed from the site.

Upon completion of each phase of the electrical installation, remove all surplus and salvaged material and debris, clean, polish and leave in perfect condition all electrical components and equipment.

1.17 WORK IN EXISTING BUILDING

Portions of the building will be occupied by the Owner through-out the construction. All work shall be performed in such a manner that there shall be no interference with the operation of the existing facilities. All required shut downs of the electric service or any other system, such as fire alarm, shall be scheduled with the Owner so as not to interfere with the Owners operation of the facility. The Contractor shall perform these shutdowns when the building is not occupied, unless otherwise instructed by the Owner, and shall complete the work prior to the building being occupied the next day of normal operation. Also schedule all shutdowns with the Authorities having jurisdiction (i.e.; Fire Dept., Utility Co., etc.) so proper precautions and procedures are followed (fire watch, etc.). See Architectural specifications and drawings for additional information and sequence of work.

Deliveries shall be scheduled so as to avoid the storage of materials and equipment in the way of vehicular and personnel traffic required for the proper operation of the existing facilities.

PART 2 PRODUCTS

Materials provided under this section shall be new, be the best of their respective kinds and shall comply with the specifications.

Samples and shop drawings of all material shall be submitted for approval as required by the Architect. See section “SUBMITTALS” for additional INFORMATION.

1.01 WIRE AND CABLE

All wire and cable shall be copper and shall comply with the standards of and be listed by the Underwriters’ Laboratories, Inc.(UL), the ASTM and the I.P.C.E.A. as applicable. Wire and cable for interior lighting and power systems shall be type THWN/THHN insulation for 600 volts. Wire and cable for EXTERIOR lighting and power systems shall be type XHHW insulation for 600 volts All wire shall be marked on the jacket with the type of insulation, gauge of wire and manufacturers name and designation.

WIRE SHALL BE SUPPLIED IN DIFFERENT COLORS FOR THE DIFFERENT PHASES IN ACCORDANCE WITH THE LATEST PUBLISHED EDITION OF THE ELECTRIC CODE, ARTICLES 210-4(D), 210-5, AND ELECTRICAL 26 00 00 - 7
OTHER PERTINENT ARTICLES. CONDUCTORS #8 AND LARGER SHALL HAVE COLORED TAPE ON EACH END OF THE CONDUCTORS AND IN EACH JUNCTION BOX IDENTIFYING THE PHASE IT IS CONNECTED TO.

WHERE TERMINAL STRIPS ARE USED FOR VARIOUS SYSTEMS (ELECTRIC, FIRE ALARM, LOW TENSION SYSTEMS, ETC.) BRADY TAGS SHALL BE INSTALLED ON EACH CONDUCTOR TO IDENTIFY THE CORRESPONDING CONDUCTOR ON EACH SIDE OF THE TERMINAL STRIP (TO INSURE PROPER RETERMINATION IF CONDUCTORS ARE REMOVED FROM THE TERMINAL STRIP FOR ANY REASON).

120/208 volt, 3 phase, 4 wire systems, Black, Red and Blue for the ungrounded conductors and white for neutral.

120/240 volt, 1 phase, 3 wire systems, Black and red for the ungrounded conductors and white for neutral.

Green shall be used for ground.

Isolated ground shall be green with a yellow stripe or other identifying stripe and a tag identifying it at each junction box (provide Thomas Betts TY-RAP identification cable ties), panelboard and/or outlet box and at the main system ground.

Conductors of different voltage systems, emergency wiring systems and other systems shall not be installed in the same raceway, junction box, pull box, etc.

All wire and cable shall be as manufactured by Triangle Wire and Cable, P.W.C., Collyer Insulated Wire Company or American Flexible Conduit Co. (AFC) or equivalent. All conductors No. 10 gauge or smaller shall be solid and No. 8 gauge and larger shall be stranded unless otherwise noted. All joints and splices of No. 10 AWG or smaller wire and cable shall be made with UL listed wire nuts or compression type connectors. All joints or splices for No. 8 AWG or larger shall be made with UL listed mechanical compression connectors - see section “WIRE AND CABLE CONNECTORS”. After the conductors have been made mechanically and electrically secure, the entire joint or splice shall be covered with two layers of UL listed rubber tape and two layers of UL listed PVC electrical tape to provide a minimum insulation value of 600 volts.

Wiring for the Life Safety Systems Feeders, Elevator Feeder, Fire Pump Feeder, and others where required by the Electric Code, Life Safety Code or other applicable codes and standards shall be type “MI” CABLE WITH A 2 HOUR FIRE RATING. It shall be installed in all areas required by the Electric Code and in accordance with the Electric Code.

Wiring runs shall be concealed in finished areas of the building.

Wiring method for ALL EXPOSED vertical wiring runs and horizontal wiring runs in unfinished areas, wiring which may be subject to physical damage and boiler wiring shall be E.M.T. or R.S.C. as applicable - see conduit section.

ALL FIRE ALARM WIRING SHALL BE IN E.M.T. OR R.S.C. CONDUIT - CABLE SHALL NOT BE USED – PROVISIONS SHALL BE MADE BY THIS CONTRACTOR FOR INSTALLING CONDUIT CONCEALED ABOVE ALL CEILINGS AND WITHIN ALL WALLS IN ALL FINISHED AREAS. Note that if the Authority having Jurisdiction approves the use of type RED ARMOR “FPL/MC” cable, in writing, they may be used. Provide letter from the Department to the Architect

Wiring which is located above ceilings in areas used for environmental air (air plenums) shall be type “MC” cable, conduit and wire or other type of cable/wire complying with the requirements of the Electric Code for use in air plenums.

Metal-clad sheathed cable, Type “MC”, with full size green ground wire may be used on interior branch circuits, where run concealed (except in concrete or block walls), unless otherwise indicated – BX IS NOT ACCEPTABLE. The outer jacket of type “MC” cable shall be listed for use as a supplemental ground path.

Support all cables types “MC” from the structure at regular intervals so there will be NO sagging of cables to provide a neat mechanical appearance. The cable shall be installed so as NOT to lay on the ceiling or ceiling tiles, ductwork, piping, etc. Supports shall be secured at intervals not exceeding 6 feet and within 12 inches of
outlet/junction box. Support of cable SHALL NOT BE from the suspended ceiling wire system. Cables shall be installed in conformance with the Electric Code. All type “MC” cables shall be UL listed.

Branch circuit wiring in all common spaces and areas as required by the Electric Code shall be metal-clad sheathed copper cable, Type MC, with green (full size) ground.

1.02 WIRE AND CABLE CONNECTORS

All joints and splices of No. 10 AWG or smaller wire and cable shall be made with UL listed wire nuts or compression type connectors.

All joints and splices for Fire Alarm System Conductors, where allowed and/or required (equipment with pigtail connections), shall be made on U.L. Listed approved terminal strips - see Fire Alarm section of the specifications.

All joints or splices for No. 8 AWG through # 4/0 AWG shall be made with UL listed mechanical compression connectors. Connectors shall have a spacer to physically maintain a separation between the conductors but shall maintain electrical continuity. Connectors shall be BURNDY type “KSA” tritap servit or equal. Provide shop drawings.

Feeder and Branch circuit conductors 250 MCM AWG through 750 MCM AWG which require splicing provide BURNDY “SPICE BLOCK” CONNECTORS” or BURNDY “U-BLOCK CONNECTORS” as applicable. The type of assembly used shall be for junction box or wireway as applicable. The assembly shall consist of a system of an insulating platform and connectors as required for the wire sizes to be terminated. The Electrical Contractor may install the system in either a wireway or junction box - order appropriate system and connectors. Provide quantity and type of power distribution connectors as required for the number of conductors terminated - EACH CONDUCTOR SHALL TERMINATE IN ITS OWN CONNECTOR - CONDUCTORS SHALL NOT BE DOUBLED UP IN A SINGLE CONNECTOR.

After the conductors have been made mechanically and electrically secure, the entire joint or splice shall be covered with two layers of UL listed rubber tape and two layers of UL Listed PVC electrical tape.

If the Electrical Contractor combines wiring runs in conduit without consulting the Engineer and installation of the proper Gauge conductor to compensate for derating, the wiring run will be determined unusable and shall be removed and all wiring properly installed at the expense of the Electrical Contractor. Multiple conductors in conduit down to panelboards WILL NOT BE ALLOWED - WIREWAYS SHALL BE USED or multiple conduits with no more than (4) four conductors shall be installed. Where flush mounted panelboards are installed all conduit and cable runs shall be installed individually down to the panelboard - do not combine runs in larger conduits with more than four conductors. Note: All conductor ampacity ratings shall be based on 60 degree rating for 100 amp Circuit Breakers and Below and 75 degree for Circuit Breaker frames larger than 100 ampere.

1.03 CONDUIT AND FITTINGS

Steel conduit (RSC or R.S.C.) shall be UL listed and shall be used in wet or damp locations, in concrete, outside, through exterior walls or roofs, where conduit may be subject to physical damage and for feeders. The conduit shall be rigid, standard weight, thick-walled, threaded, mild steel, hot-dipped galvanized with an interior coating, as manufactured by Wheatland, Republic, Allied Tube and Conduit, or equivalent. Threaded fittings such as elbows, bends, etc., shall be made of full weight material and treated with the same protective coating required for rigid conduit. All thick-walled rigid steel conduits shall have double locknuts (one inside and one outside the box, enclosure, etc.). All conduits 1.5 inch and larger shall have grounding bushings properly installed and terminated in accordance with the Electric Code.

Conduit for interior systems, where required or called for, for boiler wiring, wiring runs where exposed in unfinished areas not subject to physical damage, in dry locations and within block walls shall be UL listed and shall be thinwall Electric Metallic Tubing (EMT or E.M.T.). EMT shall be mild steel, hot-dipped galvanized, with interior coating, as manufactured by Wheatland, Republic, Allied Tube and Conduit, or equivalent. All EMT fittings shall be standard steel setscrew concrete tight type. All connectors shall have insulated throats. Cast alloy fittings will not be accepted and shall NOT be used. EMT SHALL NOT BE INSTALLED IN, UNDER OR THROUGH CONCRETE SLABS. All conduits 1.5 inch and larger shall have grounding bushings properly installed and terminated in accordance with the Electric Code.
Where PVC is called for on the exterior systems the Electrical Contractor shall install it with all required expansion fittings and other required and necessary accessories per the manufacturers recommendations. All PVC conduit shall be SCHEDULE 80 concrete encased where called for or required and shall be UL listed and approved for the installation of electric conductors. Also a DETECTABLE marker tape with the legend “CAUTION BURIED ELECTRIC BELOW” shall be installed above ALL PVC conduit runs at approx. 9 inches below grade. The detectable underground tape shall have a solid aluminum foil core for identification and detection. PVC conduit shall not be used where run exposed, through floors or concrete walls, EXCEPT WHERE SPECIFICALLY NOTED OR CALLED FOR. All elbows, stubs through floors, penetration of concrete walls, through roofs, etc. shall be Rigid Steel Conduit (R.S.C.). Provide PVC to RSC adapter at the elbows or fittings. PVC CONDUIT SHALL NOT BE USED WITHIN THE BUILDING OR WHERE EXPOSED, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. Where wiring runs are indicated to be underfloor, below concrete floor slab, Schedule 80 or 40 P.V.C. conduit may be used. ALL ELBOWS, STUBS THROUGH FLOORS, PENETRATION OF CONCRETE WALLS, ETC. SHALL BE RIGID STEEL CONDUIT (R.S.C.). PVC conduit shall be as manufactured by Carlon or equivalent.

Where PVC conduit is run exposed it shall be SCHEDULE 80 and shall be supported to provide adequate lineal movement to allow for expansion and contraction of conduit due to temperature changes. Expansion joints shall be installed in all runs, the number and spacing of expansion joints shall be as recommended by manufacturer. Provide adequate number of support clips, angles, brackets, etc. to prevent distortion of the PVC conduit (bending, warping, drooping, ETC.). The Contractor shall replace at his expense any PVC which distorts within a one year period of time from date of final acceptance of the project by the Engineer. All PVC shall be installed in accordance with the Electric Code and manufacturers recommendations. PVC conduit shall be as manufactured by Carlon or equivalent.

Flexible metal conduit is a raceway of circular cross section and shall be constructed of continuous interlocking bands of zinc coated steel and shall be complete with fittings, couplings and connectors and be UL listed and approved for the installation of electric conductors. When used an additional green bond wire shall be used to bond each end of the conduit to provide continuity. Flexible metal conduit may only be used for connection of lighting fixtures or similar use. It shall not be used for connection to motors or equipment that vibrates - Liquidtight Flexible metal conduit shall be used for that purpose. Flexible conduit shall not exceed six (6) feet in length in any given branch circuit wiring run. Provide grounding/bonding connectors at each termination point of the flexible conduit.

Liquidtight flexible metal conduit is a raceway of circular cross section and shall be constructed having an outer liquidtight, nonmetallic, sunlight-resistant jacket over the inner flexible metal core, with associated couplings, connectors and fittings, and be UL listed and approved for the installation of electric conductors. When used an additional green bond wire shall be used to bond each end of the conduit to provide continuity. Liquidtight flexible metal conduit shall be used for connections to motors, HVAC equipment, HV equipment, exterior equipment which requires flexible connection, equipment which vibrates and other connections which require a flexible, watertight connection, in Boiler and Mechanical Rooms and as required by the Electric Code. Liquidtight Flexible conduit shall not exceed six (6) feet in length in any given branch circuit wiring run. Provide grounding/bonding connectors at each termination point of the flexible conduit.

All fittings for conduits shall be steel. Where type “MC” cable is used the fittings shall be steel and be the proper type for the box and be Listed for use with type “MC” cable.

1.04     OUTLET BOXES

All outlet boxes for all wiring methods shall be UL listed and shall be galvanized 4” square with proper raised covers, unless otherwise required for the device or equipment to be mounted on or in the box. Where the boxes are cut into existing walls for flush mounting and type “MC” cable is used 2” x 4” or gang boxes may be used, unless otherwise noted, called for or required. WHERE BOXES ARE CUT INTO EXISTING WALLS THEY SHALL BE PROPERLY SECURED SO THERE IS NO MOVEMENT WHEN THE DEVICE IS OPERATED OF A PLUG INSERTED. All wall outlet boxes shall be set in wall to match finish line of walls. Wall outlets for wall mounted lighting fixtures (wall sconces, etc.) shall be 3-1/2” or 4” octagon with stud and plaster ring unless otherwise required by the fixture to be installed - Contractor shall verify the type, size and style of box required for wall mounted fixtures prior to installation. Outlet boxes shall be UL listed for their use.

Ceiling outlets shall be 4 inch octagon boxes, or 3-1/2 inch if required, with stud and plaster ring unless otherwise required. Ceiling fan outlets shall be type specifically manufactured and rated for use with ceiling fans. Ceiling
Outlet boxes shall be installed so they do not protrude below the ceiling surface. Contractor shall verify the type, size and style of the ceiling outlet box required with the type of equipment to be mounted and connected (fire alarm detector, lighting fixture, etc.). Outlet boxes shall be UL listed for their use.

At outlets of all descriptions, for all systems, there shall be provided a suitable fitting, which shall be either a box or device, especially designed to receive the type of fittings to be mounted thereon.

Outlet boxes for ground fault interrupter receptacles and surge suppressor receptacles shall be a minimum 2-1/2 inches in depth or deeper and be 4 inch square with raised cover.

All outlets on exposed work subject to the weather or in damp or wet locations shall be threaded cast device “FS” or “FD” outlet boxes of proper type and shall be flush mounted in new walls and other areas where possible. “FS”/“FD” boxes shall be as manufactured by Crouse Hinds, Killark, Appleton, or equivalent.

Tile type raised covers, depth as required, shall be used in all walls where masonry, dry wall or wood paneling will remain as finished surface. All boxes shall be as manufactured by RACO, Steel City, Appleton, or equivalent.

In unfinished areas where outlet boxes are exposed, 4” square boxes with rounded edges and with exposed work raised covers shall be used. This shall apply to all Fire Alarm devices, controls, and all other types of equipment to be mounted on outlet boxes. Panelboard covers shall not overhang the backbox installed on.

Outlet boxes shall be increased where necessary to provide conductor space for number of conductors and devices installed in conformance with the code and/or conduits 1 inch and larger. Any and all boxes with open knockouts shall have knockout seals installed in conformance with the Electric Code.

1.05 JUNCTION AND PULL BOXES

Junction or pull boxes shall be UL listed and shall be galvanized, code gauge steel and minimum size as required by the Electric Code. Junction or pull boxes larger than 4 inch square shall be furnished without knockouts with holes being field cut as required. Covers shall be secured with bronze button head screws. This Contractor is responsible for proper sizing of all junction and pull boxes in accordance with the number of conduits, conductors, etc. to meet the requirements of the National Electric Code. Any and all boxes with open knockouts shall have knockout seals installed in conformance with the Electric Code.

1.06 WIREWAY TROUGHS

Wireway troughs shall be UL listed and shall be constructed of code gauge sheet metal with hinged covers and be approved for housing and protecting electric wires and cables. Where wireway is installed with the cover in other than the upright (top of wireway) position wire clips shall be installed to secure and prevent conductors from hanging out of wireway when the cover is opened or removed. Couplings, elbows, end plates, mounting supports and accessories shall be provided where required. Wireway size shall be based on the quantity and size of conductors installed and shall be in accordance with the National Electric Code.

Where the number of conductors exceeds that allowed by the National Electric Code (30 conductors maximum inclusive of neutral conductors) additional wireways shall be installed. In no case shall there be more than a 20 percent fill in any wireway. For purposes of conductor quantities the NEUTRAL conductor is considered current carrying and shall be included in the quantity count. The Ground wire(s) are NOT current carrying and shall not be included in the quantity count.

1.07 SAFETY SWITCHES

Where called for on the drawings and elsewhere as required by the Electric Code, safety switches shall be UL listed and shall be heavy duty type, 240 Volt or 600 Volt with number of poles necessary for the intended use, fusible or non-fusible as required for the equipment served or for the intended use, weatherproof where installed exterior to the building, ampacity and/or horsepower rated as required and/or as indicated on the drawings. All safety switches shall have provisions to lock the handle in the “OFF” position.

All safety switches used on systems with neutral conductors shall have an insulated solid neutral block installed within the enclosure for connection of neutral conductors. A ground lug, bonded to the enclosure, shall be provided.
in all safety switch enclosures for connection of ground conductors. Safety switches shall be rated as “suitable for use as service entrance equipment” when used for this application.

Safety switches shall be as manufactured by Siemens or Square “D”.

Enclosures shall be NEMA type 1 where installed indoors, NEMA type 3R or 4 (watertight) where installed exterior or in unheated spaces, unless otherwise required due to the location of the safety switch. When used in an environment that is in a constantly humid state all safety switches shall be either stainless steel or fiberglass enclosure type. Where the environment is of a corrosive nature, or requires special considerations, the proper NEMA style safety switch shall be used in accordance with the hazard or corrosive nature of the space. This Contractor is responsible for verifying the type of space and hazard and providing the proper style safety switch.

This Contractor shall furnish to the Owner three (3) spare fuses for EACH type of fuse used and/or called for, and a spare fuse cabinet of sufficient size to store ALL spare fuses supplied.

1.08 INDIVIDUAL CIRCUIT BREAKERS

All individual circuit breakers shall be UL listed and shall be size as noted on the drawings or required with number of poles necessary for the intended useCircuit breakers shall be 250 volt or 600 volt rated in accordance with the electrical system voltage.

NO MORE THAN ONE CONDUCTOR PER PHASE SHALL BE PLACED ON ANY LUG OF CIRCUIT BREAKERS FROM 10 AMPERE TO 400 AMPERE UNLESS CIRCUIT BREAKERS ARE FACTORY EQUIPPED WITH DOUBLE LUGS PER PHASE. THIS CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LUG CONFIGURATION WITH THE WIRE SIZE SPECIFIED AND ORDERING THE CIRCUIT BREAKER APPROPRIATELY.

Enclosures shall be NEMA type 1 where installed indoors, NEMA type 3R or 4 (watertight) where installed exterior or in unheated and/or humid spaces, unless otherwise required due to the location of the circuit breaker. Enclosures shall have provisions to PADLOCK the Circuit Breaker in either the “ON” or “OFF” position. This provision shall be a standard option of the manufacturer and shall be purchased with the Circuit Breaker.

All individual circuit breakers shall have provisions for locking the circuit breaker in the “OFF” position. All circuit breakers used on systems with neutral conductors shall have an insulated solid neutral block installed within the enclosure for connection of the neutral conductors. A ground lug, bonded to the enclosure, shall be provided in all circuit breaker enclosures for connection of ground conductors. Circuit breakers shall be U.L. listed and rated as “suitable for use as service entrance equipment” when used for this application. Circuit breakers shall be as manufactured by Siemens or Square “D”.

1.09 PANELBOARDS

Provide where indicated on the drawings, all circuit breaker panelboards described in panelboard schedule. Panels shall be UL listed and shall be dead-front safety type with quantity and capacity of breakers and capacity of main busses as indicated on schedules. Minimum panelboard size shall be twenty (20”) inches wide and five and three - fourths (5-3/4) inches deep with height as required for quantity of circuit breakers and spaces specified. Panelboards shall be as manufactured by Siemens, Westinghouse, Square D.

Circuit breakers shall be bolt-on type, quick-make, quick-break on manual as well as automatic operation and shall be trip free from the handle so that contacts cannot be held closed against circuit faults or abnormal loads. All circuit breakers shall be full size, ½ size and tandem circuit breakers are not acceptable. Circuit breakers that are used for lighting circuits shall be U.L. marked and listed “SWD”. Circuit breakers used for Heating, Ventilation, Air Conditioning or Refrigeration equipment shall be U.L. marked and listed “HACR”. Where “blank bused space” is called for in the panelboard schedule the equipment supplier shall list the largest circuit breaker frame size and ampere setting that the blank space can accommodate.

When the Panelboard is used as SERVICE ENTRANCE EQUIPMENT with a MAIN CIRCUIT BREAKER it shall be U.L. Listed for this use. Also the Main Circuit Breaker shall have provisions to PADLOCK the main circuit breaker in either the “ON” or “OFF” Positions. These provisions shall be a standard option by the manufacturer and shall be purchased with the panelboard.
Panelboard main busses shall be based inclusive of neutral and ground busses. Busses shall be drilled and tapped to permit future circuit changes such as, but not limited to, removal, replacement, rearranging or adding new circuit breakers in blank spaces. All necessary and required hardware shall be furnished for all circuit breakers frame size 100 ampere (15 through 100 amp setting). Panelboards shall contain a main circuit breaker or main pressure, bolted lugs sized as indicated and to accommodate feeder conductors indicated.

The trim of all flush panels shall be completely factory painted. The surface type panels shall be completely painted, trim and backbox exterior. Paint shall be a special hard gloss enamel finish, ANSI #61 light gray. Dull lacquer finish will not be acceptable. Panelboard covers shall not overhang the edges of the backbox when installed on surface backboxes.

Panel trims shall have “FRONT HINGED TO BOX” (“door in door” - concealed hinged door within hinged trim) construction and concealed trim clamps and door(s) equipped with concealed hinges, flush type combination locks and catch. Panels shall all be keyed alike. Provide Owner with two keys for each panel. A directory card holder shall be installed on the door of each panelboard. For power panelboards which are doorless, the Electrical Contractor shall provide screw mounted lamacoid nameplates at the sides of each circuit breaker indicating the use - see equipment identification section of this specification.

Panelboard modifications shall be as indicated in the Panelboard Schedule.

1.10 MAIN ELECTRIC SERVICE EQUIPMENT AND METERING

Provide main service equipment, consisting of main service disconnect, provisions for C.T.’s (enclosure), metering conduits, Secondary service conductors, etc., all as indicated on the drawings, herein specified and as required by the Utility Company. C.T.’s will be furnished by the Utility Company and installed by this Contractor in the C.T. cabinet. Verify all metering equipment and service entrance information with the Utility Company prior to any construction and installation.

Current characteristics of the new service are 208Y/120 volts, 3 phase, 4 wire, 60 Hertz A.C.

This Contractor shall file a service location card with the Utility Company well in advance of construction in order to verify all service and metering information.

1.11 LIGHTING

Provide lighting fixtures, equipment and lamps for all lighting outlets inside and outside the building as shown on the drawing(s) and listed in the fixture schedule - substitutions will not be accepted. All lighting fixtures shall be UL listed. ALL PAINTED FINISHES SHALL BE APPROVED BY THE ARCHITECT BEFORE FIXTURES ARE PURCHASED. All yokes, plaster frames, straps, mounting plates, nipples, brackets, etc., shall be supplied where required for proper installation and to suit type of ceiling construction. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE CEILING TYPE AND ORDERING THE FIXTURES ACCORDING TO THE TYPE OF CEILING BEING INSTALLED.

Where SUPRA FINE reduced size suspended ceiling grid, standard “T” bar, or other suspended type ceiling is being installed this Contractor shall inform the lighting representative of the various areas so the proper fixtures will be ordered. Also provide “EARTHQUAKE CLIPS” for holding the ceiling grid to the lighting fixture housing. These clips shall be provided for each fluorescent fixture or downlight style fixture. Where fixtures are surface mounted on ceiling grid tiles this contractor shall provide a length of unistrut to be placed on the back of the ceiling tile and secure fixture through the tile to the unistrut. The Unistrut shall then be supported from the structural ceiling with threaded rod so the ceiling tile can be positioned and fitted properly in the grid.

The Contractor shall provide to the Owner/Client all cost for lighting fixtures and lamps, including invoices, if requested by the Owner/Client, so all necessary documentation for the Utility Company Rebate program as outlined by the Utility Company publication WILL be complied with.

1.12 SWITCHES
Lighting switches shall be as specified in the symbol list on drawings and be of the flush, silent, toggle type and shall be UL listed. All switches shall contain a green grounding terminal screw to ground the frame of the switch. ALL SWITCHES SHALL BE EXTRA HARD USE SPECIFICATION GRADE - COMMERCIAL GRADE AND RESIDENTIAL GRADE WILL NOT BE ACCEPTED AND WILL BE REMOVED AND REPLACED BY THE ELECTRICAL CONTRACTOR AT THEIR EXPENSE IF INSTALLED. They shall be as manufactured by Leviton, Hubbell or Pass and Seymour (P & S).

All lighting switches shall be located, as near as practical, to the door frames of the area to be controlled.

Switches shall be installed securely in the outlet box, so there will be no movement of the device. If the device moves, when pressed on, the Contractor shall correct the problem. Where required, provide shims (such as “B-Line “Retainer Leveler”) between the device and the outlet box to hold the device firmly in place flush with wall surface. The plate shall not be used as the means of holding the device in place.

All colors of switches shall be as selected by the Architect. Catalog numbers represent the type and style of the device specified for installation and does not represent the color choice. If the color installed by this Contractor is not acceptable to the Architect they shall be replaced at no additional cost to the Owner, at the Contractors expense. Colors selected shall be of the standard colors of GRAY, IVORY, WHITE, BROWN. Colors shall vary in accordance with the room or space finish. THE ARCHITECT RESERVES THE OPTION OF CHOOSING MULTIPLE COLORS FOR USE IN THE VARIOUS SPACES IN ACCORDANCE WITH THE VARIOUS COLOR SCHEMES USED WITHIN THE STRUCTURE.

Motor disconnect switches shall be as specified in the symbol list on drawings and shall be UL listed. These switches shall have a provision to lock the switch in the “OFF” position. These switches shall be mounted in, on or adjacent to motor/equipment that is to be controlled. Wherever possible mount the switches within the equipment.

1.13 OCCUPANCY SENSORS

All products shall be Watt Stopper, make and models as identified on drawings.

1.14 RECEPTACLES AND MISCELLANEOUS DEVICES

Receptacles and miscellaneous devices shall be as specified in the symbol list on the drawings and shall be UL listed. ALL RECEPTACLES SHALL BE HARD USE OR EXTRA HARD USE SPECIFICATION GRADE, COMMERCIAL GRADE AND RESIDENTIAL GRADE WILL NOT BE ACCEPTED AND WILL BE REMOVED AND REPLACED BY THE ELECTRICAL CONTRACTOR AT THEIR EXPENSE IF INSTALLED. They shall be of the type, rating and number of poles indicated and required for the anticipated purpose. They shall be as manufactured by Leviton, Hubbell or Pass and Seymour (P & S).

Receptacles shall be installed with the grounding connection up above the hot and neutral connections.

Receptacles shall be installed securely in the outlet box, so there will be no movement of the device. If the device moves, when pressed on, the Contractor shall correct the problem. Where required, provide shims (such as “B-Line “Retainer Leveler”) between the device and the outlet box to hold the device firmly in place flush with wall surface. The plate shall not be used as the means of holding the device in place.

All colors of receptacles and miscellaneous devices shall be as selected by the Architect. Catalog numbers represent the type and style of the device specified for installation and does not represent the color choice. If the color installed by this Contractor is not acceptable to the Architect they shall be replaced at no additional cost to the Owner, at the Contractors expense. Colors selected shall be of the standard colors of GRAY, IVORY, WHITE, BROWN. Colors shall vary in accordance with the room or space finish. The Architect reserves the option of choosing multiple colors for use in the various spaces in accordance with the various color schemes used within the structure.

1.15 WIRING DEVICE PLATES

Device plates shall be UL listed and shall be unbreakable type, Leviton “80700” or “80400-N” (decorator style) unbreakable nylon series, Pass and Seymour (P & S) “SRP” unbreakable nylon series or Hubbell “P” unbreakable nylon series, or stainless steel type 302. Stainless Steel type 302 shall be used in areas where plates may be subject
to damage such as equipment storage rooms, mechanical rooms, warehouse spaces, etc. Special plates and plates requiring engraving shall be stainless steel type 302. Plates shall be as manufactured by Leviton, Pass and Seymour (P & S) or Hubbell.

1.16 TELEPHONE SYSTEM

Provide a conduit raceway system for telephone including junction boxes, sleeves and outlets as called for on the drawings and as required

Before beginning the installation, this Contractor shall verify exact locations of all outlets shown on the drawings and the sizes of all outlets and junction boxes with the Owner. The Owner/vendor will furnish and install all wiring, equipment and devices and tie into the telephone system.

1.17 FIRE ALARM SYSTEM

All equipment shall be U.L. listed and Factory Mutual approved and shall be installed in accordance with any and all applicable NFPA standards, Rhode Island Fire Safety Code requirements and meet with the approval of the Authority having jurisdiction. The Electrical Contractor shall provide to the Fire department, prior to the start of construction, a complete set of instruction manuals on the Panel and all devices for review and acceptance.

All system equipment, excluding the master box, shall be by the same manufacturer and shall bear the same manufacturer's name. "Hybridized" systems (systems containing equipment from several different manufactures) will not be accepted. The system shall be expandable, class "A" fire alarm system. All new fire alarm equipment shall be manufactured by the same manufacturer of the existing fire alarm control panel to remain.


Alarm verification shall be a standard option for all addressable smoke detectors. This feature shall allow those smoke detectors that are installed in environments prone to nuisance or unwanted alarms to operating with the following sequence: System Ready - prior to smoke detector alarm; Smoke Detector Alarm - @time = 0; Pre-Alarm Window - ~85 seconds, the system shall respond to a second alarm from the same smoke detector or any other devices on the same loop as a system alarm; System Ready - @ no alarm verification.

Smoke detector sensitivity programming shall be a standard feature. "DAY/NIGHT" sensitivity settings shall be a standard feature which may be used at the discretion of the Authority having jurisdiction.

All alarm signals shall be automatically "locked in" at the control panel until the operated device is returned to its normal condition and the control panel is manually reset.

Each initiating and signal circuit shall be electrically supervised for opens, shorts, and ground faults in the wiring.

The Signal loops shall be 2 wire class "A" loop same as the detection loop, unless otherwise indicated on the one line diagram. The Strobe circuits shall be independent of the Horn circuits to allow for silencing of the Alarm Horns without deactivating the strobe lights. Separate controls shall be used for deactivating the strobe lights. Each set of silencing switches shall be clearly labeled (horn/audible signals and strobe/visible signals).

The entire fire alarm system shall be connected via a (16) sixteen zone radio master box. The zoning of the Master box shall be in accordance with the requirements of the fire department.

Zones and programming shall be verified with the Fire Department. The Fire Alarm System Representative shall review all addresses for each device with the Fire Department representative. Any revisions to the initial review shall be made by the System Representative. If further revisions are required during the Fire Alarm Test they shall be made at no additional cost to the project.

Refer to the drawings and other portions of the specification to determine the quantities of components required for the system.
Wiring: The Electrical Contractor shall furnish and install in accordance with the equipment manufacturers instructions and as indicated on the drawings all wiring, conduit, outlet boxes, etc. required for a complete operating system as described herein.

All wiring shall be solid copper. Detection Circuits shall be minimum No. 14 gauge type “FPL” twisted pair(s) non-shielded cable installed in conduit, type as recommended by the manufacturer with minimum of 4 twist per foot (verify with the manufacturer of the fire alarm equipment). The resistance of the overall loop shall not exceed 40 Ohms. Horn and separate Strobe Signal Circuits, and other fire alarm system wiring shall be minimum No. 14 gauge, unless otherwise required or noted. Conductors for the standard system shall be type THHN 600 volt rated insulation, installed in metallic raceway.

Where allowed by the Authority having jurisdiction type “RED ARMOR FPL/MC” 105 degree centigrade cable with RED ARMOR OUTER COVERING as manufactured by AFC may be used. This cable type “RED ARMOR FPL/MC” cable with red colored armor jacket is allowed ONLY WHEN WRITTEN PERMISSION IS PROVIDED BY THE AUTHORITY HAVING JURISDICTION WITH A COPY OF THE LETTER FORWARDED TO THIS ENGINEERS OFFICE AND THE ARCHITECT. Without this letter the electrical contractor will not be allowed the use of FPL/MC cable.

ALL WIRING SHALL BE INSTALLED CONTINUOUS WITHOUT SPLICING - Where splicing is allowed by the Authority having jurisdiction and the Contractor has received written permission (copies to be forwarded to the Architect and Engineer) this wiring shall be properly terminated on screw type terminal blocks. Where equipment has factory installed pigtailed, terminal blocks shall be installed in the junction box and splicing accomplished at the terminal block in accordance with the Rhode Island Fire Safety Code. Wire nuts or other splicing methods are not acceptable for conductor terminations. Terminal blocks shall be of a type that are acceptable to the Authority having jurisdiction.

Provide a metal tag on each ground conductor at the water service and ground rods with the legend “FIRE DEPARTMENT CONNECTION - DO NOT REMOVE”. The metal tags shall be a type acceptable to the Fire Department and all lettering shall be height as directed and be engraved directly onto the tag. Secure the tags by a riveted loop around the cable with the legend extending straight out from the loop.

All conductors are to be color coded as follows (unless otherwise required by the Authority having jurisdiction):

A. Detection Circuit: Shall be Red and Black. Red shall be positive and Black shall be negative.
B. Horn Circuit: Shall be Blue and White. Blue shall be positive and White shall be negative.
C. Flashing Strobe Circuit: Shall be Orange and Yellow. Orange shall be positive and Yellow shall be negative.
D. Exit Sign Interface Circuit: Shall be Orange and Yellow. Orange shall be positive and Yellow shall be negative.
E. Sprinkler/Standpipe Connection: Shall be Red and Black. Red shall be positive and Black shall be negative.
F. Smoke Detector Circuits (4 WIRE TYPE WHICH REQUIRE A SEPARATE FEED ONLY): Detectors that require a separate power feed shall be Violet and Brown. Violet shall be positive and Brown negative.
G. Municipal Master Box Tripping Circuits: Shall be Orange and Orange. Radio master boxes or transmitters requiring multiple zone connections shall be orange, numbered on each end. Conductors for this circuit shall be installed in a separate raceway.
H. Bond Wires: From the control panel to the master box and to earth ground rod, and all other required bonding conductors, shall be Green. Provide separate earth ground rods for both the Fire Alarm Control Panel and the Master Box.
I. Municipal Fire Alarm Loop: From the master box to the city alarm circuit shall be Black and White and shall be IMSA Spec 19-1, unless otherwise required by the local Authority having jurisdiction.

All conductors shall be tagged at all junction points and test free from grounds and shorts between conductors and the raceway system. The wiring system shall be carried throughout all equipment. All conductor splices, when required and by permission only, shall be made on screw type terminal blocks in accordance with the Rhode Island
Fire Safety Code and all terminal blocks shall be properly labeled; wire nuts, butt, crimp or screw type connectors shall not be used.

All terminal, junction and outlet boxes shall be painted red, including the covers. All terminal boxes shall have a hinged lockable red cover which shall be keyed the same as the Fire Alarm Control Panel. The first 6 inches of the conduit system from the outlet, terminal or junction box shall be painted red. In addition ALL fittings used on the conduit system shall be painted red.

Final connections between the control equipment and the field wiring shall be made under the direct supervision of the manufacturer’s representative.

This Contractor shall provide (1) one copy of the shop drawing of the fire alarm system equipment to the Authority having jurisdiction for review. This submission shall be made prior to system rough-in and/or installation. All comments, approvals and/or rejections from the Fire Department shall be forwarded with the shop drawing submission to the Architect (Engineer). Three (3) copies of the shop drawings shall be provided to the Authority having jurisdiction along with the as built drawings as indicated in other paragraphs of this specification.

Guarantee and Final Test: All equipment and wiring shall be guaranteed to be free from inherent mechanical and electrical defects for a period of one year from the date of final acceptance.

A complete test shall be conducted as follows: The installing Electrical Contractor in the presence of the Representative of the Authority having jurisdiction, shall manually operate every manual fire alarm station, activate every rate of rise type thermodetector with heat, manually operate or electrically short every fixed temperature thermodetector, actuate every smoke detector in accordance with the manufacturer’s recommendations, actuate every smoke detector with smoke to demonstrate that smoke can enter the chamber and initiate an alarm, activate all automatic extinguishing system switches, and activate every water sprinkler/standpipe flow switch by a flow of water.

Each station/thermodetector/smoke detector/flow switch/detection circuit/extinguishing system switching circuit and each alarm horn/strobe or strobe only signaling circuit shall be opened in at least two locations to test for the correctness and proper operation of the supervisory circuitry. While these circuits are open they shall be grounded to check for proper operation of ground detection. Also at the time of the circuits being open a device on each side of the open shall be activated to check for class “A” type operation. All communications shall be tested completely.

After installation and prior to acceptance, the Contractor shall prepare five (5) sets of as built drawings consisting of a one line diagram and marked up floor plans of the entire installation which shall indicate wiring between equipment, including routing of wiring, and the locations of all of the system connected devices such as Control Panel, manual pull stations, various types of detectors, flow and tamper switches on the sprinkler system, terminal and junction boxes, etc. These as built drawings shall be distributed as follows: 1. Three sets to the Authority having jurisdiction, 2. One set to the equipment supplier, 3. One set to the building Owner. Each set shall be signed by the Electrical Contractor and the manufacturer’s technical representative as to being true and correct. A letter attesting to this action shall be forwarded to the Electrical Engineer. When the above test has been completed to the satisfaction of the manufacturer’s representative, the Electrical Contractor’s foreman, and the local Fire Department/Authority having jurisdiction, a letter witnessed and co-signed by all attesting to the completion of this testing shall be forwarded to the Architect and the Electrical Engineer.

This Contractor shall provide three (3) copies of the approved shop drawing of the fire alarm system equipment to the Authority having jurisdiction with the as built drawings.

This Contractor shall provide to the Authority having jurisdiction three (3) sets of as built drawings of the entire fire alarm system as outlined in the previous paragraphs.

When prints are being submitted the initial submittal shall consist of 3 sets of prints and 1 sepia. The sepia will be marked up and returned for corrections and/or record prints, to the Vendor. There shall be a second submittal which shall consist of prints in the quantity specified under SUBMITTALS and the additional quantities required for distribution as indicated in previous paragraphs, for record purposes. This does not negate the responsibility of prior submission to the Fire Alarm Authority having jurisdiction.
PART 3  EXECUTION

The electrical systems and equipment layouts are generally diagrammatic, exact and final locations shall be determined and coordinated in the field by this Contractor. In most cases equipment circuitry is indicated by panelboard designation and circuit number. It is this Contractors responsibility to wire the system in accordance with the National Electric Code. No more than (4) Four conductors shall be installed in any raceway or cable assembly - see other portions of the specifications. The routing of wiring, in some cases is schematically indicated, but it is not intended to show every offset and fitting, nor every structural difficulty or obstacle that will be encountered during the installation of the work. If the alignment of conduit/wiring has to be varied from that shown on the drawings, where necessary on account of slight architectural changes, structural conditions, field conditions, space restrictions or to avoid the work of any other trades, it shall be done without extra expense to the Owner. Provide all necessary equipment, fittings, LB’s, Junction Boxes, Wireways, etc. which are required to overcome space restrictions, special construction, obstacles, height restrictions, low ceilings, high ceilings requiring staging, etc. All exposed conduit shall be secured tight to the ceiling and/or wall surfaces and shall be run at right angles to and parallel with the directions of the walls - diagonal runs will not be accepted and will be replaced at the Electrical Contractors expense. It is the Electrical Contractors responsibility to verify routing of all wiring runs and install same so as not to interfere with the structure or the work of other trades.

It is the Electrical Contractors responsibility to verify all conditions relating to equipment dimensions and locations. Any and all construction methods required due to low ceilings in equipment locations, obstructions, routing of conduit/wiring runs in or around the structure, obstructions which have to be overcome, etc. are the responsibility of the Electrical Contractor. All equipment locations on the drawings are diagrammatic, exact and final locations shall be determined and coordinated in the field by this Contractor. The electrical contractor is responsible for all field conditions and shall include such in his bid.

3.01  UNDERGROUND CONDUIT

All conduit called for to be installed underground shall be installed a minimum of (36”) thirty six inches below finished grade. All Electric Primary Service conduits shall be installed in accordance with Utility Company requirements (including concrete encasement). All other Utility Underground conduits shall be installed in accordance with the Utilities(y) standards (Telephone, Cable TV, Fire Alarm, etc.) unless the drawings are more stringent - then the conduit system shall be installed in accordance with the drawings. Concrete encasement shall be provided for all underground conduits that are installed under roadways, parking lots or other areas where there is vehicular traffic. Schedule 80 thick-walled PVC shall be used unless otherwise specified or required by the different Utility services - Schedule 40 PVC is not acceptable unless concrete encased. All elbows through floors and/or pads or penetrations through walls shall be Thick-walled Rigid Threaded Steel Conduit (RSC). Provide concrete encasement where required by the Utility Companies, by the Electric Code and where called for on the drawings or elsewhere in the specifications.

A marker tape with the legend “CAUTION ELECTRIC LINES BURIED BELOW” shall be installed above ALL underground metal or PVC conduit runs and low voltage direct burial cable

3.02  FEEDERS AND BRANCH CIRCUITS

As part of this contract this Contractor shall operate each circuit breaker in each existing panelboard to identify the load/equipment served (lighting, receptacles, etc.). Provide new typed directories in the panelboards showing the utilization of each circuit and new stick on numbers on each circuit breaker. Directory shall contain information as outlined in the “equipment identification” section of this specification. The Contractor shall mark up a print with the Owners room/area designations and use these designations in the panelboard schedule.

All necessary fittings, LB’s, condulets, junction and pull boxes shall be installed in runs to facilitate wire pulling and conduit installation and shall be in accordance with the Electric Code. These boxes and fittings shall be provided whether or not shown.

All conduits and fittings on exposed work shall be secured by means of metal clips, held in place by means of Polyset Solid Masonry type anchors (for use on CMU, concrete or other masonry or solid type construction) and machine screws. When installed over concrete surfaces, the screws shall be held in place by means of Polyset Solid Masonry type anchors or other acceptable means - the installation shall not depend on the screw alone.
ANCHORS ARE NOT ACCEPTABLE AND SHALL BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE IF INSTALLED.

All conduit on exposed work shall be run at right angles to and parallel with the surrounding walls and shall conform to the shape of the ceiling. Conduit shall be secured tight to the wall and/or ceiling surfaces and shall not hang down from these surfaces. No diagonal runs shall be permitted. Bends and offsets shall be avoided as far as possible. Where bends cannot be avoided, conduit fittings shall be used. Conduit in all cases shall be run straight and true, satisfactory to the Architect. Where conduits must pass through structural members, permission shall be first obtained from the Architect and then a provision will be made by the General Contractor. All thick-walled rigid steel conduits shall have double locknuts (one inside and one outside the box, enclosure, etc.). All conduits (Rigid Steel and/or E.M.T.) 1.5 inch and larger shall have grounding bushings properly installed and terminated in accordance with the Electric Code.

All type “MC” cable shall be properly secured in accordance with the Code, utilizing U.L. Approved cable staples specifically made for the type of cables installed. These cables may only be used in areas designated in other parts of this specification. Support cable from the structure at regular intervals so there will be NO sagging of cables to provide a neat mechanical appearance. The cable shall be installed so as NOT to lay on the ceiling or ceiling tiles, ductwork, piping, etc.

All cable types “MC” shall be secured at intervals not exceeding 6 feet and within 12 inches of the outlet/junction box which the cable is terminated at. All terminations shall be made utilizing U.L. Approved connectors made specifically for the type of cables installed.

Raceways shall be installed and terminated to exclude dirt, plaster, moisture and foreign material from entering, while the project is in the process of construction. All thick-walled rigid steel conduits shall have double locknuts (one inside and one outside the box, enclosure, etc.). All conduits (Rigid Steel and/or E.M.T.) 1.5 inch and larger shall have grounding bushings properly installed and terminated in accordance with the Electric Code.

All raceways shall be complete in every respect before electrical conductors and/or cables are installed. No splices or joints will be permitted in either feeders or branches except at outlets or at accessible junction boxes.

Provide expansion fittings in all conduits passing through all building expansion joints and in other areas in accordance with manufacturers recommendations for the type of conduit used and the length of the conduit run.

Provide sleeves for the installation of wiring runs (raceways, cables, etc.) through Fire Rated and bearing walls, all ceilings, all floors, etc. Seal openings between wiring run and inside surface of sleeve and around sleeve with a U.L. listed (3) three hour rated fire proofing material approved for this purpose. Install fireproofing material as instructed by the manufacturer and to meet the requirements of the fire rating required at the penetration. Fireproofing material shall be type acceptable to the Architect - It is the Electrical Contractors responsibility to meet the required fire rating regardless of acceptance of material by the Architect.

Wiring runs shall be installed concealed in all finished portions of the building even if runs have to be relocated. Relocation of wiring runs shall be reviewed with the Architect.

At all surface mounted panelboards branch circuits shall be brought to wireways which shall be installed from the top of the panelboard to above the accessible hung ceiling or near the structural ceiling where there is no hung ceiling. Where panelboards contain 24 poles or less provide 2 - 2-1/2 inch wireways, panelboards with more than 24 poles shall have 3 - 2-1/2 inch wireways installed. Cable outer coverings shall be terminated at the wireway, conductors shall be brought down the wireway into the panelboard unspliced. Provide a nipple connection from the wireways into the panelboard consisting of a maximum 3 inch long nipple, maximum diameter possible (the panelboard backbox does not have to be cut for the wireway entrance). Provide proper connectors for termination of cables to the wireway. All wireways shall have hinged covers. Where larger conductors (other than #12 or #10) are to be installed the Electrical Contractor shall not exceed the 30 conductor or 20% fill limit of the wireway. FEEDERS TO OTHER PANELBOARDS AND/OR LARGER THAN #8 GAUGE WIRE SHALL BE INSTALLED IN SEPARATE CONDUITS AND SHALL NOT BE INSTALLED IN THESE WIREWAYS.

All branch circuit conductors shall be #12 AWG size, SOLID copper, except as otherwise indicated on the drawings or required. All No. 12 AWG conductors shall be increased to #10 AWG if the length to center of load is more than 100 feet. All color codes for conductors shall comply with Articles 200 and 210 of the Latest Published Edition of
the National Electric Code and shall be identified at the panelboard as indicated in Article 210-4(d) where there is more than one voltage in the building, see section “WIRE AND CABLE”. Conductors of the different voltage systems shall NOT be installed in the same raceways, junction boxes, pull boxes, wireways, etc. Wire insulation to be type THHN/THWN where used for the interior systems and type XHHW where used for the exterior systems.

Outlets shall be located approximately where indicated on the drawings and shall be properly centered where located in paneled work or other special interior finish. The Architect reserves the right to relocate outlets, using the same amount of material, before actual construction begins, without expense to the Owner. See general notes for additional requirements.

Verify all dimensions, electrical characteristics, location and method of connection to all types of equipment, devices, appliances and accessories prior to installing any runs - see other portions of the specifications for Contractor responsibilities. When indicated, verify the number of wires indicated on the various systems wiring runs and report any discrepancies to the Engineer. For circuitry indicated by circuit number only the Contractor is responsible for layout with the proper number of conductors in accordance with the Electric Code and these specifications. For appliances and equipment furnished under other divisions of work verify the type and characteristics of the wiring runs. Responsibility to see that all systems and equipment function correctly and as intended is included in this division of the contract documents.

For equipment furnished with a cord and plug provide a matching receptacle. Equipment with direct connection provide final connection. Wiring connections to equipment shall include connection to all the associated accessories. The Electrical Contractor is responsible to verify the type of final connection and the equipment and accessories required for the connections. Provide flexible conduit or liquid tight flexible conduit where required. Provide disconnects where required by the Electric Code and/or where called for.

3.03 GROUNDING

Bond all raceways, outlets and all exposed non-current carrying metallic parts of the electrical equipment in accordance with the Electric Code. Each system shall be properly grounded by means of separate grounding conductors installed with branch circuit wiring and feeders and by means of bonding jumpers sized in accordance with the Electric Code. All conduits, nipples, locknuts, bushings and EMT fittings shall be tightly made up to form a continuous bond throughout. All thick-walled rigid steel conduits shall have double locknuts (one inside and one outside the box, enclosure, etc.). All conduits (Rigid Steel and/or E.M.T.) 1.5 inch and larger shall have grounding bushings properly installed and terminated in accordance with the Electric Code.

Where type “MC” cable is used the armor shall be type approved as a supplemental ground path. IN NO CASE SHALL A CABLE ASSEMBLY WHICH DOES NOT HAVE THE UNDERWRITERS LABORATORIES INC. (UL) LISTING FOR THE OUTER JACKET MEETING THE REQUIREMENTS FOR A SUPPLEMENTAL GROUND PATH BE USED. IN ADDITION TO THE OUTER JACKET THERE SHALL BE A FULL SIZE GROUND WIRE AS PART OF THE CABLE ASSEMBLY.

Provide conduit(s) with bare copper stranded wire(s) from the main service(s) to the street side of the water meter and sprinkler service and to a grounding grid of driven ground rods as required by Section 250-81 of the Electric Code. In the event that the exterior water pipe is non metallic or determined as not suitable for grounding purposes a 20 foot or longer grounding electrode encased in the building concrete foundation shall be installed in accordance with the Electric Code Article 250-81(c). Provide sleeve for mechanical protection where this electrode penetrates the foundation. The metal frame of the building shall be grounded in accordance with the Electric Code.

Provide grounding of the Fire Alarm System as described in the Fire Alarm section of this specification.

Ground shall be tested to verify that the resistance is not more than called for by the Electric Code. If resistance is higher, additional ground rods shall be added as necessary.

3.04 LIGHTING

Provide a complete lighting system from the lighting panels to the outlets on the lighting system including wire, conduit, feeders, outlet boxes, junction boxes, switches, fixtures, aligner clips, lens straps, lamps and accessories required for a complete lighting system as shown on the drawings and herein specified.
Where SUPRA FINE reduced size suspended ceiling grid, standard “T” bar, or other suspended type ceiling is being installed this Contractor shall provide “EARTHQUAKE CLIPS” for holding the ceiling grid to the lighting fixture housing. These clips shall be provided for each fluorescent fixture or downlight style fixture. This Contractor shall also inform the lighting representative of each area where supra fine grid is being installed so the correct fixture body can be ordered. IT IS THIS CONTRACTOR RESPONSIBILITY TO HAVE THE CORRECT FIXTURE STYLE ORDERED TO SUIT THE CEILING.

Where the fixture is installed on a hard ceiling (sheetrock / plaster, etc.) threaded rod supports shall be provided which shall be attached to the structure and penetrate the ceiling - fixtures are to be secured to these rods with locknuts and lockwashers - coordinate with ceiling contractor. Seal around rods with an approved fire proofing material. A minimum of (2) two rods per fixture (eight foot maximum fixture) shall be used. Where fixtures exceed eight foot in length two (2) rods for each eight foot section or fraction thereof shall be used. Fixtures are to be secured hard to the ceiling surface.

Where recessed round or square “can” style lighting fixtures are to be installed in either suspended or hard ceilings the Electrical Contractor shall provide an actual trim for each style of lighting fixture to the ceiling contractor for confirmation of actual dimensions. Catalog data sheets shall not be used for dimensional information. Consultation with the Factory and/or the factory authorized representative will be required in the absence of the actual trims.

All circuits shall be balanced at the panels on all phases of the system and circuit numbers may be changed, if necessary, to accomplish this result.

Install all roughing boxes for built in fixtures. These boxes shall be delivered to the site and be installed well in advance of permanent construction so that there will not be any loss time, delay or subsequent cutting and patching. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE TYPE OF BOX AND FITTINGS REQUIRED FOR ALL TYPES OF FIXTURES. IF THE WRONG STYLE BOX IS INSTALLED IT SHALL BE REPLACED BY THE CONTRACTOR WITH NO ADDITIONAL COST TO THE PROJECT.

Verify type of ceiling being installed to ascertain proper type of fixture, fittings and accessories to go with ceiling.

Verify if any lighting fixtures will be in direct contact with insulation materials. If fixtures are to be in direct contact with insulation materials and provisions have not been made to insure insulation is not in direct contact or that the lighting fixtures are not type approved for direct contact with insulation report this to the Architect. Provisions will be made by the General Contractor for fluorescent fixtures to keep insulation material away from the fixture. Incandescent fixtures shall be type which are “UL listed for direct contact with insulation materials”. Prior to ordering this type of fixture verify the style with the Architect and Engineer. The Contractor will be responsible for ordering the fixtures to suit conditions and the type of ceiling being installed.

Exit signs shall be installed either on the ceiling or on the wall. THE MAXIMUM HEIGHT OF EXIT SIGNS SHALL BE NINE FEET (9'-0") ABOVE THE FINISHED FLOOR TO TOP, MINIMUM HEIGHT SHALL BE SEVEN FOOT (7'-0") ABOVE THE FINISHED FLOOR TO BOTTOM. EXIT SIGNS SHALL BE LOCATED TO THE SIDE OF DOORWAYS OR OPENINGS IF CEILING MOUNTING WILL CAUSE THE EXIT SIGN TO EXTEND BELOW THE TOP OF THE DOOR FRAME OR OPENING OR BE HIDDEN FROM VIEW - VERIFY NEW LOCATION PRIOR TO INSTALLATION (DO NOT INSTALL IN SOFFITS OR OTHER AREAS WHERE THE EXIT SIGN WILL NOT BE READILY SEEN). The Electrical Contractor is responsible for verification of ceiling heights at all openings/areas where exit signs are to be mounted and report any discrepancies immediately to the Architect and Engineer prior to installation.

All exterior flood and spot lights shall be adjusted during the evening hours, after sunset, to insure proper aiming of the fixtures. The Architect is to be notified one (1) week in advance of the day aiming will take place so a representative from their office may be in attendance at the job site during aiming.

Interior flood and spot lights shall be aimed in the presence of the Architect and Owner to insure the proper effect is achieved.

3.05 HEATING, VENTILATING AND MISCELLANEOUS POWER

Motors, in general, unless otherwise specified, will be supplied by other sections of the specification with the various items of equipment requiring same. Connect the motors to the source of supply. Motors furnished under this section...
of the specification shall be energy efficient type conforming to the energy conservation section of the State Building Code. Motors furnished under other sections of the specification shall be checked and if found to be non-energy efficient, shall be brought to the attention of the Architect and Engineers.

All motors shall be checked to verify they have been supplied in the voltage and phase indicated on the electrical drawings. Multi tap motors (200/240/480) shall be checked to verify the tap is the correct current characteristics for the building voltage - change tap if necessary to match building voltage and phase, change overload heaters in the starters as required. If other motors are found to be different than what is described on the drawings, the Architect and Engineer shall be notified immediately to determine if the motor, circuit breaker(s), safety switch(es), disconnect switch(es) or any other equipment/controls are to be changed. If this Contractor does not notify the Architect it shall be the Contractor's responsibility to provide all necessary changes to panelboard circuit breaker(s), controls, safety switch(es), etc. If provided in the wrong voltage for the building the contractor supplying the motor is to be notified by this contractor so the equipment/motor can be replaced with the correct voltage and characteristics for the building system.

All motor starters, push buttons, pilot lights and other miscellaneous controls for all motors and equipment shall be furnished under other sections of the specification and installed and connected under this section, unless otherwise noted. All safety switches, disconnects, thermal switches and toggle switches shall be furnished and installed under this section. All motors shall be connected from outlets through Liquidtight flexible metal conduit. In damp or wet locations, flexible metal conduit to be liquid tight. All starters and similar controls shall be installed in an accessible location, verify exact location with the Architect and Engineer.

All thermal elements for motor protection shall be provided by the Electrical Contractor and shall be correct type for protecting each type of motor.

Wire multiple runs of electric baseboard on the same thermostat by connecting to the LINE side of the internal limit switch. Note: wiring from the load side of a limit switch to the next limit switch will cause improper operation of the baseboard and reduced heat output.

Provide temperature control and power wiring called for on the electrical drawings. All other control and power wiring not shown on the electrical drawings, but required, shall be provided under other sections of the specifications.

### 3.06 OCCUPANCY SENSORS

All equipment shall be installed per manufacturers instructions to insure sensors activate and operate as intended.

### 3.07 SUBMITTALS

After first checking for compliance and making all necessary notations and corrections, submit for approval ten (10) sets (unless other quantity of data is required by the Architectural Specifications) of shop drawings, product data, wiring diagrams (where applicable) on all component parts of the following equipment and systems:

- A. Service equipment.
- B. Panelboards.
- C. Safety Switches
- D. Motor disconnect switches and enclosures.
- E. Wire connectors.
- F. Fuses with type and rating indicated and spare fuse cabinet.
- G. Individual circuit breakers.
- H. Lighting fixtures
- I. Wall switches, receptacles and other wiring devices and plates
- J. Fire Alarm equipment.
- K. Timeclocks, photocells, relays and accessories.
- L. Emergency lighting equipment.
- M. Emergency Generator Annunciator Panel
- N. Occupancy Sensor System Equipment

END OF SECTION 26 00 00