PROJECT MANUAL

Issued For Construction: October, 2018

COMMUNITY COLLEGE OF RHODE ISLAND

New Two Floor Elevator

Liston Campus
One Hilton Street
PROVIDENCE, RHODE ISLAND 02905

AHARONIAN & ASSOCIATES, INC. - ARCHITECTS

310 George Washington Highway - Suite 100 - Smithfield, Rhode Island 02917 T 401-232-5010 F 401-232-5080

AHARONIAN & ASSOCIATES INC. - ARCHITECTS

310 George Washington Highway - Suite 100 - Smithfield, Rhode Island 02917 T 401-232-5010 F 401-232-5080

CCRI LISTON CAMPUS
New Two Floor Elevator
Providence, Rhode Island 02905 AA# 18021

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DOCUMENT 00 01 15

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 represents 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:

Number	Title
CS	COVER SHEET
D1.1	DEMOLITION FLOOR PLANS
D1.2	DEMOLITION CEILING PLANS
D4.1	DEMOLITIION WALL SECTIONS
A1.0	PARTITION TYPES
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A1.2	FLOOR FINISH PLANS & SCHEDULE
A1.3	REFLECTED CEILING PLANS & SCHEDULE
A2.1	DOOR & WINDOW ELEVATIONS, SCHEDULE & DETAILS
A4.1	WALL SECTION
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A4.4	WALL SECTION
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S1.1	FOUNDATION PLAN & SECTION
S1.2	FRAMING PLANS & DEMOLITION ROOF FRAMING PLAN & DETAILS

M1.1 MECHANICAL PLANS & DETAILS

LS1.1 SCHEMATIC LIFE SAFETY PLANS

E1.1 POWER PLANS & DETAIL
E1.2 LIGHTING PLANS

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTIONS (Not Applicable)

END OF DOCUMENT 00 01 15

DOCUMENT 00 43 13
BID SECURITY FORM

AIA DOCUMENT A310 – Latest Edition
BID BOND

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

END OF DOCUMENT 00 43 13

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

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

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

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

OWNER:
(Name, legal status and address)
The State of Rhode Island, acting by and through the Department of Administration
Division of Purchases on behalf of the User Agency
One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855

BOND AMOUNT: $

PROJECT:
(Name, location or address, and Project number, if any)
Liston Two Floor Holeless Elevator
Community College of Rhode Island Liston Campus
One Hilton Street
Providence, Rhode Island 02905

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

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

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such

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

Signed and sealed this day of ,

	(Contractor as Principal) *(Seal)*
(Witness)	*(Title)*
	(Surety) *(Seal)*
(Witness)	*(Title)*

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DOCUMENT 00 52 00
AGREEMENT FORM

AIA DOCUMENT A101 - 2007 Edition
ABBREVIATED STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION PROJECTS OF LIMITED SCOPE WHERE THE BASIS OF PAYMENT IS A STIPULATED SUM AS MODIFIED BY STATE PURCHASING

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

END OF DOCUMENT 00 52 00

AIA® Document A101™ – 2007

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of _____.
(Paragraph Deleted)

(Date of issuance of Owner's Purchase Order)

BETWEEN the Owner:

(Paragraph Deleted)

The State of Rhode Island, acting by and through the Department of Administration
Division of Purchases, on behalf of the User Agency
One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855
(401) 574-8100 (telephone)
(401) 574-8387 (facsimile)
www.purchasing.ri.gov

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

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

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

AIA Document A201™–2007, 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.

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

New Two Floor Holeless Elevator
Liston Campus
One Hilton Street
Providence, Rhode Island 02905

The User Agency:
(Name of user agency, address, telephone and facsimile numbers, and web address)

Community College of Rhode Island
Knight Campus
400 East Avenue
Warwick, RI 02886
(401) 825-2380 (telephone)
(401) 825-2382 (facsimile)

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The Design Agent:
(Name, legal status, address, telephone and facsimile numbers, and web address)

Aharonian & Associates, Inc.
310 George Washington Hwy, Suite 100
Smithfield, RI 02917
(401) 232-5010 (telephone)
(401) 232-5080 (facsimile)

The Owner and Contractor agree as follows.

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ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others. No part of the Work shall be performed by Subcontractors without the Owner's prior written consent.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1

(Paragraph Deleted)

The date of commencement of the Work will be stipulated by the User Agency. The Contractor shall be authorized to commence the Work *only* upon the issuance of the Purchase Order by the Owner *and* an authorization from the User Agency.

(Paragraph Deleted)

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

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User Notes: (3B9ADA0A)

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than (90) days from the date of commencement, or as follows:
(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

Portion of Work	**Substantial Completion Date**
All of the Work	90Calendar Days from Issuance of CCRI PO

, subject to adjustments of this Contract Time as provided in the Contract Documents.

(Paragraph Deleted)

§ 3.4 The Contractor and the Contractor's surety shall be liable for and shall pay the Owner the sums stipulated herein as liquidated damages, and not as penalty, for each calendar day of delay until the Work is substantially complete: _Five Hundred Dollars___($_500___) Dollars.

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

ARTICLE 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 Dollars ($), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates

N/A

§ 4.3 Unit
prices are specified in the Bid Form.

(Table Deleted)

§ 4.4 Allowances are specified in the Bid Form

(Paragraph Deleted)

(Table Deleted)

ARTICLE 5 PAYMENTS

§ 5.1 PROGRESS PAYMENTS

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

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payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents, and in accordance with the provisions of "Prompt Payment by Department of Administration," R.I. Gen. Laws §§ 42-11.1-1 et seq..

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

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

(Paragraph Deleted)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Design Agent and Owner may require.

§ 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 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of five percent (5 %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™–2007, General Conditions of the Contract for Construction;

.2 Add 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), less retainage of five percent (5 %);

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract amounts, if any, for which the Design Agent has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201–2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Design Agent shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and

(Paragraph Deleted)

.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201–2007.

§ 5.1.8 Intentionally omitted.

(Paragraph Deleted)

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

§ 5.2 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 Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment;

.2 a final Certificate for Payment has been issued by the Design Agent and approved in writing by the Owner; and

.3 .the Contractor has submitted its final waiver of lien and final waivers of lien from all of its Subcontractors and suppliers in a form acceptable to the Owner; and

.4 the Contractor has submitted to the Owner all close-out documents, including without limitation, all as-built plans, warranties, manuals, and other materials set forth in the Contract Documents.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 working days after the issuance of the Design Agent's final Certificate for Payment and written approval by the Owner, and in accordance with the provisions of "Prompt Payment by Department of Administration," R.I. Gen. Laws §§ 42-11.1-1 et seq..
.

§ 5.3 OWNER'S RIGHTS

§ 5.3.1 The Owner shall have the right to deduct from any payments due to the Contractor the amount of any unpaid obligations owed to the State of Rhode Island by the Contractor, including without limitation, any and all unpaid taxes, and to pay the amount of such deductions to the Controller of the State of Rhode Island.

§ 5.3.2 The Owner shall have the right to deduct from any payments due to the Contractor the amount of any claim against the Contractor arising out of this Agreement or on account of any other reason.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

§ 6.1.1 The Purchasing Agent appointed pursuant to the provisions of the "State Purchases Act," R.I. Gen. Laws §§ 37-2-1 et seq., will serve as Initial Decision
Maker in accordance with the provisions of the State Purchases Act, State of Rhode Island Procurement Regulations, and Section 15.2 of AIA Document A201–2007.

§ 6.1.2 For any Claim (as defined in Section 15.1.1 of AIA Document A201-2007) not resolved by the procedures set forth in § 6.1.1, the parties shall use their best efforts to resolve such Claim by mediation in Providence, Rhode Island. Any party may apply in writing to the Presiding Justice of the Providence County Superior Court, with a copy to the other parties, with a request for the court to appoint a mediator, and the costs of the mediator shall be borne equally by all of the parties. In the event that the parties are unable to resolve any and all Claims through mediation, then any party may pursue the legal remedies provided in § 6.2

§ 6.2 BINDING DISPUTE RESOLUTION

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For any Claim not resolved by the Initial Decision Maker procedures set forth in § 6.1.1or the mediation procedures pursuant to § 6.1.2, the method of binding dispute resolution shall be
determined in accordance with the provisions of the State Purchases Act, R.I. Gen. Laws §§ 37-2-1 et seq., the "Public Works Arbitration Act," R.I. Gen. Laws §§ 37-16-1 et seq., the "Administrative Procedures Act," R.I. Gen. Laws §§ 45-35-1 et seq., and the State of Rhode Island Procurement Regulations.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2007. The Contract may also be terminated by the Owner: (i) in the event of the unavailability of appropriated funds; (ii) in the absence of a determination of continued need; or (iii) as otherwise provided in the State of Rhode Island Procurement Regulations General Conditions of Purchase or other applicable law.

§ 7.2 The Work may be suspended by the Owner as provided in the State of Rhode Island Procurement Regulations General Conditions of Purchase and/or Article 14 of AIA Document A201–2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 .
No interest shall be due or payable on account of any payment due or unpaid except in accordance with the *provisions of "Prompt Payment by Department of Administration," R.I. Gen. Laws §§ 42-11.1-1* ***et seq.***

§ 8.3 State of Rhode Island Representatives.

§ 8.3.1 The Owner's representative:
(Name, title, address, and other information for the preferred methods of contact)

Mark Libutti, College Projects Manager
401-825-2380 (telephone)

§ 8.3.2 The User Agency's representative:
(Name, title, address, and other information for the preferred methods of contact)

Mark Libutti College Projects Manager
401-825-2380 (telephone)

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User Notes: (3B9ADA0A)

§ 8.4 The Contractor's representative.
(Name, title, address, and other information for the preferred methods of contact)

§ 8.5 The Design Agent's representative.
(Name, title, address, and other information for the preferred methods of contact)

John Aharonian, President
Aharonian & Associates, Inc.
310 George Wshington Highway, Suite 100
Smithfield, Rhode Island 02917
401-232-5010 (telephone)

§ 8.6 Neither the Owner's, nor the Contractor's, nor the Design Agent's representative shall be changed without ten days written notice to the other parties.

§ 8.7 Other provisions.

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

.1 The Contractor and its Subcontractors are each financially solvent, able to pay their debts as they mature, and possessed of sufficient working capital to perform their obligations under the Contract Documents.
.2 The Contractor and its Subcontractors are each able to furnish the materials, equipment, and labor required to complete the Project as required under the Contract Documents.
.3 The Contractor has visited the site of the Project, familiarized itself with the local and special conditions under which the Work is to be performed, and correlated its observations with the requirements of the Contract Documents.
.4 The Contractor possesses the requisite level of experience and expertise in the business administration, construction, and superintendence of projects of the size, complexity, and nature of the Project, and it will perform the Work with the care, skill, and diligence of such a contractor.

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

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

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

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ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document
State of Rhode Island
Procurement
Regulations

§ 9.1.4 The Specifications:
(Paragraph Deleted)

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

(Table Deleted)

§ 9.1.5 The Drawings:
(Paragraph Deleted)

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

(Table Deleted)

§ 9.1.6 The Addenda issued pursuant to the Solicitation are available on the Division of Purchases website at www.purchasing.ri.gov

(Table Deleted)

(Paragraph Deleted)

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

.1

(Paragraph Deleted)

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The Solicitation issued by the Owner, including without limitation, the Invitation to Bid, the Instructions to Bidders, the Specifications and Drawings, any Addenda, and the Bid Checklist (with applicable forms)

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

3. The Purchase Order issued by the Owner.

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

§ 9.1.9 In the event of any conflict between the State of Rhode Island Procurement Regulations or any provision of the Rhode Island General Laws and the Supplementary and other Conditions of the Contract or other Contract Documents, the State of Rhode Island Procurement Regulations and the Rhode Island General Laws will control.

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in the Solicitation and Article 11 of AIA Document A201–2007.

ARTICLE 11 BENEFITS OF AGREEMENT

§ 11.1 Third-party Beneficiary. The User Agency is a disclosed third-party beneficiary of this Agreement and shall have all of the rights and benefits to which such a party is entitled hereunder.

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

(Table Deleted)

This Agreement is dated as of the day and year first written above; provided, however, that this Agreement shall not become a binding contract until the Owner has issued a Purchase Order pursuant to § 3.1. The person signing for the Contractor below represents that he or she has been duly authorized to execute this Agreement on behalf of the Contractor.

THE STATE OF RHODE ISLAND, acting
by and through its Department of Administration
Division of Purchases

OWNER*(Signature)*	***CONTRACTOR****(Signature)*
(Printed name and title)	*(Printed name and title)*

Init.

/

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DOCUMENT 00 61 13
PERFORMANCE AND PAYMENT BOND FORM

AIA DOCUMENT A312 – Latest Edition
PERFORMANCE AND PAYMENT BOND

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

END OF DOCUMENT 00 61 13

AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)
The State of Rhode Island, acting by and through the Department of Administration
Division of Purchases, on behalf of the User Agency
One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855

CONSTRUCTION CONTRACT
Date:
Amount: $
Description:
(Name and location)
Liston Two Floor Holeless Elevator
Community College of Rhode Island Liston Campus
One Hilton Street
Providence, Rhode Island 02905

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: None See Section 16

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*
Signature:
Name and Title:

SURETY
Company: *(Corporate Seal)*
Signature:
Name and Title:

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

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

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

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

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

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

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

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

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

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

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

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

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

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

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

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

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

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

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

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

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

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

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

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

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

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

§ 14 Definitions

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

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

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

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

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

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

§ 16 Modifications to this bond are as follows:

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

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address:		Address:	

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User Notes:

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Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)
The State of Rhode Island, acting by and through the Department of Administration
Division of Purchases, on behalf of the User Agency
One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855

CONSTRUCTION CONTRACT
Date:
Amount: $
Description:
(Name and location)
Liston Two Floor Holeless Elevator
Community College of Rhode Island Liston Campus
One Hilton Street
Providence, Rhode Island 02905

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: None See Section 18

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*
Signature:

Name and Title:

SURETY
Company: *(Corporate Seal)*
Signature:

Name and Title:

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

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

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

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

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

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

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

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

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

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

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

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

.2 have sent a Claim to the Surety (at the address described in Section 13).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 16 Definitions

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

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

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

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

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

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

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

§ 18 Modifications to this bond are as follows:

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

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address:		Address:	

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SECTION 00 62 16
ACORD CERTIFICATE OF INSURANCE FORM

AIA DOCUMENT G715 Latest Edition
ACORD CERTIFICATE OF INSURANCE FORM

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

END OF DOCUMENT 00 62 16

AIA® Document G715™ – 2017

Supplemental Attachment for ACORD Certificate of Insurance 25

PROJECT: *(name and address)*
Liston Two Floor Holeless Elevator
Community College of Rhode Island Liston Campus
One Hilton Street
Providence, Rhode Island
02905

CONTRACT INFORMATION:
Contract For: General Construction
Date:

CERTIFICATE INFORMATION:
Producer:
Insured:
Date:

OWNER: *(name and address)*
The State of Rhode Island, acting by and through the Department of Administration Division of Purchases, on behalf of the User Agency
One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855

ARCHITECT: *(name and address)*
Aharonian & Associates, Inc.
310 George Washington Highway, Suite 100
Smithfield, Rhode Island
02917

CONTRACTOR: *(name and address)*

A. General Liability	**Yes**	**No**	**N/A**
1. Does this policy include coverage for:			
a Damages because of bodily injury, sickness, or disease, including occupational sickness or disease, and death of any person?	☐	☐	☐
b Personal injury and advertising injury?	☐	☐	☐
c Damages because of physical damage to or destruction of tangible property, including the loss of use of such property?	☐	☐	☐
d Bodily injury or property damage arising out of completed operations?	☐	☐	☐
e The Contractor's indemnity obligations included in the Contract Documents?	☐	☐	☐
2. Does this policy contain an exclusion or restriction of coverage for:			
a Claims by one insured against another insured, where the exclusion or restrictions is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim?	☐	☐	☐
b Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor?	☐	☐	☐
c Claims for bodily injury other than to employees of the insured?	☐	☐	☐
d Claims for the Contractor's indemnity obligations included in the Contract Documents arising out of injury to employees of the insured?	☐	☐	☐
e Claims for loss excluded under a prior work endorsement or other similar exclusionary language?	☐	☐	☐
f Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language?	☐	☐	☐
g Claims related to residential, multi-family, or other habitational projects?	☐	☐	☐
h Claims related to roofing?	☐	☐	☐
i Claims related to exterior insulation finish systems, synthetic stucco, or similar exterior coatings or surfaces?	☐	☐	☐
j Claims related to earth subsistence or movement?	☐	☐	☐
k Claims related to explosion, collapse, and underground hazards?	☐	☐	☐

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B. Other Insurance Coverage

		Yes	No	N/A
1.	Indicate whether the Contractor has the following insurance coverages and, if so, indicate the coverage limits for each.			
a	Professional liability insurance Coverage limits:	☐	☐	☐
b	Pollution liability insurance Coverage limits:	☐	☐	☐
c	Insurance for maritime liability risks associated with the operation of a vessel Coverage limits:	☐	☐	☐
d	Insurance for the use or operation of manned or unmanned aircraft Coverage limits:	☐	☐	☐
e	Property insurance Coverage limits:	☐	☐	☐
f	Railroad protective liability insurance Coverage limits:	☐	☐	☐
g	Asbestos abatement liability insurance Coverage limits:	☐	☐	☐
h	Insurance for physical damage to property while it is in storage and in transit to the construction site Coverage limits:	☐	☐	☐
i	Other:	☐	☐	☐

_____
(Authorized Representative)

_____
(Date of Issue)

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DOCUMENT 00 65 20
RELEASE OF LIENS

AIA DOCUMENT G706A – Latest Edition
Release of Liens

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

END OF DOCUMENT 00 65 20

AIA® Document G706A™ – 1994

Contractor's Affidavit of Release of Liens

PROJECT: *(Name and address)*
Liston Two Floor Holeless Elevator
Community College of Rhode Island
Liston Campus
One Hilton Street
Providence, Rhode Island 02905

TO OWNER: *(Name and address)*
The State of Rhode Island, acting by and through the Department of Administration Division of Purchases, on behalf of the User Agency
One Capitol Hill, Second Floor
Providence, Rhode Island 02908

ARCHITECT'S PROJECT NUMBER:
AA# 18021

CONTRACT FOR: General Construction

CONTRACT DATED:

OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
SURETY: ☐
OTHER: ☐

STATE OF:
COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY: _____
(Signature of authorized representative)

_____
(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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SECTION 00 72 00
GENERAL CONDITIONS

AIA DOCUMENT A201 - 2007 Edition
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION AS MODIFIED BY STATE PURCHASING

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

END OF DOCUMENT 00 72 00

+

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

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

New Two Floor Holeless Elevator at Liston Campus
Community College of Rhode Island
Liston Campus
One Hilton Street
Providence, Rhode Island 02905

THE OWNER:
The State of Rhode Island, acting by and through the Department of Administration
Division of Purchases, on behalf of the User Agency
One Capitol Hill, Second Floor
Providence, Rhode Island 02908-5855
(401) 574-8100 (telephone)
(401 574-8387 (facsimile)
www.purchasing.ri.gov

THE USER AGENCY

(Name, legal status, address, telephone and facsimile numbers, and web address)
Community College of Rhode Island, Knight Campus
400 East Avenue
Warwick, RI 02886
(401) 825-2380 (telephone)
(401) 825-2382 (facsimile)

THE ARCHITECT:
(Name, legal status, address, telephone and facsimile numbers, and web address)
Aharonian & Associates, Inc.
310 George Washington Hwy, Suite 100
Smithfield, RI 02917
(401) 232-5010 (telephone)
(401) 232-5080 (facsimile)

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

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

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(Paragraphs Deleted)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (the Agreement) and consist of the Agreement (and the documents enumerated therein), Conditions of the Contract (General, Supplementary, if any, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Design Agent.

§ 1.1.2 THE CONTRACT

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

§ 1.1.3 THE WORK

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

§ 1.1.4 THE PROJECT

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

§ 1.1.5 THE DRAWINGS

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

§ 1.1.6 THE SPECIFICATIONS

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

§ 1.1.7 INSTRUMENTS OF SERVICE

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

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

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

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by one shall be as binding as if required by all; the Contractor shall perform all Work reasonably inferable from the Contract Documents as being necessary to produce the indicated results.

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

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

§ 1.2.4 In the event of any conflicts or discrepancies among the Contract Documents, the provisions of the Contract Documents will be interpreted in the following order of priority:

1. Modifications (if any).
2. The Purchase Order.
3. The Agreement.
4. The Solicitation., including any Addenda, and the Specifications and Drawings
5. The Supplementary Conditions (if any).
6. The General Conditions.
7. The Bid Proposal.

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

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

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

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

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

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

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

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§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

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

ARTICLE 2 OWNER

§ 2.1 GENERAL

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

§ 2.1.2 Intentionally omitted.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Intentionally omitted.

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

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

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

§ 2.2.5 Intentionally Omitted

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

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

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

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

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the

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jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

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

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

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

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

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

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

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

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

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

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

(Paragraph Deleted)

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documentation.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

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

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

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

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Whenever the Contractor has an obligation to provide labor and materials under this Agreement, the Contractor, at a minimum, shall provide the labor for, and furnish and install and place in operation all items, including without limitation, all proper connections.

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

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

§ 3.5 WARRANTY

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

§ 3.6 TAXES

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

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

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

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections required by the Rhode Island State Building Code necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. The Contractor shall be responsible for obtaining the Certificate of Occupancy from the appropriate governmental authorities.

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

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

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

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

§ 3.8 ALLOWANCES

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

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§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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

§ 3.9 SUPERINTENDENT

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

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Design Agent the name and qualifications of a proposed superintendent. The Design Agent may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Design Agent has reasonable objection to the proposed superintendent or (2) that the Design Agent requires additional time to review. Failure of the Design Agent to reply within the 14 day period shall constitute notice of no reasonable objection.

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

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

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

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

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

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Design Agent and shall be delivered to the Design Agent for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

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§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

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

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

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

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

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

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

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

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

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

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Design Agent will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations,

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specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Design Agent. The Owner and the Design Agent shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Design Agent have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Design Agent will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

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

§ 3.13 USE OF SITE

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

§ 3.14 CUTTING AND PATCHING

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

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

§ 3.15 CLEANING UP

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

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

§ 3.16 ACCESS TO WORK

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

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

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

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, the State of Rhode Island,, and each executive, legislative, judicial, regulatory, or administrative body of the state, or

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any political subdivision thereof, including without limitation, any department, division, agency, commission, board, office, bureau, committee, authority, educational institution, school, water, or fire district, or other agency of Rhode Island state or local government that exercises governmental functions, any other governmental authority, and any quasi-public corporation and/or body corporate and politic, their elected or appointed officials, members, employees, and agents , Design Agent, Design Agent's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees and costs of arbitration and/or litigation, arising out of or resulting from performance of the Work, and/or the obligations of the Contractor under the Contract Documents, but only to the extent caused by the acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

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

ARTICLE 4 DESIGN AGENT

§ 4.1 GENERAL

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

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

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

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Design Agent will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction through the date the Design Agent issues the final Certificate for Payment and continuing until the expiration of the warranty period in § 3.5. The Design Agent will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Design Agent will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Design Agent will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Design Agent will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

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

Work.

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§ 4.2.3 On the basis of the site visits, the Design Agent will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Design Agent will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Design Agent will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

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

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

§ 4.2.6 The Design Agent has authority to reject Work that does not conform to the Contract Documents. Whenever the Design Agent considers it necessary or advisable, the Design Agent will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Design Agent nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Design Agent to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

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

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

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

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

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

§ 4.2.12 Interpretations and decisions of the Design Agent will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Design Agent will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

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

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

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

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Design Agent the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Design Agent may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Design Agent has reasonable objection to any such proposed person or entity or (2) that the Design Agent requires additional time for review.Design Agent

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

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

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

§ 5.2.5 MANUFACTURERS AND FABRICATORS

§ 5.2.5.1 Not later than 10 days after the date of commencement of the Work, the Contractor shall furnish in writing to the Owner through the Design Agent the names of the manufacturers or fabricators for certain

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products, equipment, and systems identified in the Specifications and, where applicable, the name of the installing Subcontractor. The Design Agent may reply within 14 days to the Contractor in writing, stating: (i) whether the Owner or the Design Agent has reasonable objection to any such proposed person manufacturer or fabricator; or (ii) whether the Design Agent requires additional time to review.

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

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

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

§ 5.3 SUBCONTRACTUAL RELATIONS

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

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

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

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

(Paragraph Deleted)

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

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or

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operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation.

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

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

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

§ 6.2 MUTUAL RESPONSIBILITY

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

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

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

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

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

§ 6.3 OWNER'S RIGHT TO CLEAN UP

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

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

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

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

§ 7.2 CHANGE ORDERS

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

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

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

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

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

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

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

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

§ 7.3.4 Intentionally omitted.

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

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

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Design Agent shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Design Agent may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- **.1** Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

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.2 Costs of materials, supplies and equipment, including cost of delivery;
.3 Rental costs of machinery and equipment;
.4 Costs of premiums for all bonds and insurance, permit fees related to the Work.
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(Paragraph Deleted)

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

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

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

§ 7.4 MINOR CHANGES IN THE WORK
The Design Agent has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Design Agent and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME
§ 8.1 DEFINITIONS
§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established pursuant to § 3.1 of the Agreement.
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§ 8.1.3 The date of Substantial Completion is the date certified by the Design Agent in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean working day, excluding weekends and legal holidays.

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

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

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

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§ 8.3 DELAYS AND EXTENSIONS OF TIME

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

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

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

§ 9.2 SCHEDULE OF VALUES

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

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least 10 days before the date established for each progress payment, the Contractor shall submit to the Design Agent and the Owner for approval an itemized Application for Payment prepared in accordance with the schedule of values for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Design Agent may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

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

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

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

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

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

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the

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Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work. The Contractor shall immediately satisfy any lien, claim, or encumbrance against the site where the Project is located and indemnify the Owner from and against all resulting costs and expenses, including without limitation, attorneys' fees

§ 9.4 CERTIFICATES FOR PAYMENT

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

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

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

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

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

.1 defective Work not remedied;

.2 third-party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials, or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or a separate contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

.7 failure to carry out the Work in accordance with the Contract Documents; or.

.8 any other failure to comply with the obligations of the Contractor under the Contract Documents.

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

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

§ 9.6 PROGRESS PAYMENTS

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

§ 9.6.2 The Contractor shall pay each Subcontractor no later than 7 days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

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

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. The Owner shall have the right to withhold payment(s) to the Contractor in the event that any Subcontractors or material and equipment suppliers have not been properly paid. Neither the Owner nor Design Agent shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

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

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

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

§ 9.7 FAILURE OF PAYMENT

If the Design Agent does not issue a Certificate for Payment, through no fault of the Contractor, within 7 days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within 7 days after the date established in the Contract Documents the amount certified by the Design Agent or awarded by binding dispute resolution, then the Contractor may, upon 7 additional days' written notice to the Owner and Design Agent, make a claim for payment as provided under the provisions of "Prompt Payment by Department of Administration," R.I. Gen. Laws §§ 42-11.1-1 et seq.

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§ 9.8 SUBSTANTIAL COMPLETION

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

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

§ 9.8.3 Upon receipt of the Contractor's list, the Design Agent will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Design Agent's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Design Agent. In such case, the Contractor shall then submit a request for another inspection by the Design Agent to determine Substantial Completion. The Design Agent will perform no more than two (2) inspections to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Design Agent for any additional inspections.

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

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

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Design Agent as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Design Agent.

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

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

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

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

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to the Contractor's being entitled to final payment have been fulfilled. The Design Agent will perform no more than two (2) inspections to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Design Agent for any additional inspections.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Design Agent (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

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

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

- **.1** liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** claims permitted under the State of Rhode Island Department of Administration Division of Purchases General Conditions of Purchase.

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

§ 9.11 The Contractor and the Contractor's surety shall be liable for and shall pay the Owner as liquidated damages the sums specified in the Solicitation and Bid Form.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

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

§ 10.2 SAFETY OF PERSONS AND PROPERTY

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

- **.1** employees on the Work and other persons who may be affected thereby;
- **.2** the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

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.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

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

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

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

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

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

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

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

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

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

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

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Design Agent the names and

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qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Design Agent will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Design Agent has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Design Agent have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

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

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

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

§ 10.3.6
Intentionally omitted.

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

ARTICLE 11 INSURANCE AND BONDS
§ 11.1 CONTRACTOR'S LIABILITY INSURANCE
§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as is specified in the Solicitation and as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

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

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.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

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

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

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

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

§ 11.1.5 The Contractor shall be responsible for the prompt payment to the Owner of any deductible amounts under any insurance policies required under the Contract Documents for claims made pursuant to such policies.

§ 11.2 OWNER'S LIABILITY INSURANCE

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

§ 11.3 PROPERTY INSURANCE

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

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

§ 11.3.1.2 Intentionally omitted.

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

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

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

§ 11.3.2 Intentionally omitted.

(Paragraph Deleted)

§ 11.3.3Intentionally omitted.
(Paragraph Deleted)

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§ 11.3.4 Intentionally omitted.

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

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

§ 11.3.7 WAIVERS OF SUBROGATION
The Contractor waives all rights against the Owner and the User Agency and any of their subcontractors, sub-subcontractors, agents and employees, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that

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person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under this property insurance shall be adjusted by the Contractor as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

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

§ 11.3.10 The Contractor as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Contractor's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Contractor as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

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

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

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

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

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

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

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§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Design Agent, the Owner may correct it in accordance with Section 2.4.

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

§ 12.2.2.3 The one-year period for correction of Work shall be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

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

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

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

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

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

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

§ 13.2 SUCCESSORS AND ASSIGNS

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

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to any executive, legislative, judicial, regulatory, or administrative body of the state, or any political subdivision thereof, including without limitation, any department, division, agency, commission, board, office, bureau, authority, school, water, or fire

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district, or other agency of Rhode Island state or local government that exercises governmental functions, any other governmental authority, and any quasi-public corporation and/or body corporate and politic. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

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

§ 13.4 RIGHTS AND REMEDIES

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

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

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Design Agent timely notice of when and where tests and inspections are to be made so that the Design Agent may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Design Agent, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Design Agent will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Design Agent of when and where tests and inspections are to be made so that the Design Agent may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Design Agent's services and expenses shall be at the Contractor's expense.

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

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

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

§ 13.6 INTEREST

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

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§ 13.7 TIME LIMITS ON CLAIMS
The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT
§ 14.1 TERMINATION BY THE CONTRACTOR
§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped; or
.3 Because the Design Agent has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1

(Paragraph Deleted)

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§ 14.1.Intentionally omitted.

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

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

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE
§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

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

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

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

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

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

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

§ 14.3.2 Intentionally omitted. The Owner shall not be liable to the Contractor or any Subcontractor for claims or damages of any nature caused by or arising out of any delays. The sole remedy against the Owner for delays shall be the

allowance of additional time for completion of the Work.

(Paragraph Deleted)

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

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

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

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

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

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

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

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Design Agent. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

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

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

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

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

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

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

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES
The Contractor waives Claims against the Owner for consequential damages arising out of or relating to this Contract. This waiver includes
(Paragraph Deleted)

damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

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

§ 15.2 INITIAL DECISION
§ 15.2.1 Claims shall be referred to the Initial Decision Maker for initial decision. The Purchasing Agent appointed pursuant to the provisions of the "State Purchases Act," R.I. Gen. Laws § 37-2-1 et seq., will serve as the Initial Decision Maker in accordance with the provisions of the State Purchases Act, State of Rhode Island Procurement Regulations, and this Section 15.2.An initial decision shall be required as a condition precedent to mediation and binding dispute resolution of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered.

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

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial

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Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

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

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Design Agent of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

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

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, apply in writing to the Presiding Justice of the Providence County Superior Court, with a copy to the other parties, with a request for the court to appoint a mediator, and the costs of the mediator shall be borne equally by all of the parties.

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

§ 15.2.8 Intentionally omitted.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which shall be administered by the Presiding Justice of the Providence County Superior Court. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the court. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

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

§ 15.4 Intentionally Omitted.

(Paragraphs Deleted)

§ 15.4.4 CONSOLIDATION OR JOINDER

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

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

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

§ 16 COMPLIANCE WITH APPLICABLE LAW

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

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DOCUMENT 00 73 46
WAGE DETERMINATION SCHEDULE

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:

http://www.purchasing.state.ri.us/home.html

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

Documents are not contained within this Project Manual, 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.

END OF DOCUMENT 00 73 46

AHARONIAN & ASSOCIATES INC. - ARCHITECTS

310 George Washington Highway - Suite 100 - Smithfield, Rhode Island 02917 T 401-232-5010 F 401-232-5080

CCRI LISTON CAMPUS
New Two Floor Elevator
Providence, Rhode Island 02905 AA# 18021

DOCUMENT 00 91 13
ADDENDA

Insert Addenda as issued.

SECTION 01 10 00
SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of construction of a new two floor Holeless ADA complaint elevator including life safety hookups and tying into the emergency generator.

B. Coordination with Owner's separate concurrent contracts, if any.

C. General Requirements:

1. Contractor shall perform the Work of the Contract under a stipulated sum Contract with the Owner in accordance with the Conditions of Contract.

2. Vendor is responsible for obtaining and paying for any required Local and State licenses, Permits and Inspections.

3. Contractor to include all Bond costs in their Bid.

4. Before starting work, all Contractor workers and Subs are required to obtain and submit a current BCI and State-approved picture ID. CCRI reserves the right to deny Campus access to any worker based on information provided on the submitted BCI. All BCI's to be current within one calendar month of start of onsite work.

5. All onsite workers are to be OSHA 10 certified. Copies of certifications along with driver licenses are required on the first day of work.

6. The Contractor is responsible for providing their workers with all personal protection equipment. at a minimum, this includes hard hats, reflective vests, eye protection, harnesses and ear protection.

7. All completed work must be inspected and approved by College and Architect.

8. There will be mandatory bi- weekly progress meetings onsite with four week look-ahead schedules to be furnished to the architect and College.

9. Vendor and/or its subcontractors are to be licensed as required by RI Department of Labor.

10. All contractors and subcontractors to sign in each employee at the CCRI Security Office located on the lower level at the start of each shift.

11. A full time superintendant is required for the extent of construction. Selected vendor to submit resume of proposed Super and/or on site personnel for College team to review and approve. College reserves the right to reject proposed Superintendant.

12. A full list of subcontractors to be provided as part of the submittal package at the time of tentative award.

13. No substitution will be considered prior to receipt of bid unless written request for approval has been received by the Division of Purchases no later than 10 days before the closing of the Bid. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data and other information necessary for any evaluation. A statement setting forth changes in other materials, equipment, or other portions of the work, including changes in work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The State of Rhode Island's decision of approval or disapproval of the proposed substitution shall be final. If the State approves a proposed substitution prior to receipt of bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner. No substitutions will be considered after the Contract Award except as provided for in the contract documents.

14. Contractors are not permitted to display a project sign anywhere on the campus grounds.

15. Contractor to provide all conex boxes for storing of their equipment of tools. The College is not responsible for lost or stolen tools/equipment or materials.

16. Contractor is responsible for welding safety procedures. Personal protective equipment according to OSHA latest recommendations.

17. For welding tasks accomplishment contractor shall coordinate previously with Owner all related conditions, including and not limited to area ventilation, exhausting electrical power sources and storage and handling of compressed gas cylinders.

18. General Contractor required to utilize CCRI Fire Alarm and Sprinkler warrantee contractors.

19. Hot work permit required per FM Global including fire watch. Cost to be included in Base Bid.

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 USE OF SITE AND PREMISES

A. GENERAL: The Owner intends to fully occupy the facility during the period of construction.

B. CONSTRUCTION OPERATIONS: Coordinate with Owner to insure delivery and completion per the schedule. Include all costs of this coordination, including all premium time wages that may be required to meet these requirements, in the Base bid. Fulltime maintenance and security personnel are on staff at CCRI during night and weekend hours. The College is not responsible for stolen materials, tools, equipment, etc.

C. Provide access to and from site as required by law and by Owner:

1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if routes are temporarily altered during 3rd shift only. Include and maintain temporary fire extinguishers within the limit of construction.

2. Do not obstruct roadways, sidewalks or other public ways without permission from the Owner.

3. Contractor to provide temporary signage to identify the work area and emergency egress points.

D. TIME RESTRICTIONS

1. All weekend work is to be coordinated with the college at least 72 hours in advance.

2. All noisy work and concrete placement to be done 3rd shift. Non-noisy work can occur first shift.

3. Coordinate work with college staff to avoid disruptions of college activities. Coordinate and adjust workflow weekly and by special request.

E. UTILITY OUTAGES AND SHUTDOWN

1. Do not disrupt or shut down life safety systems, including but not limited to fire alarm system, without 7 days notice to the Owner and authorities having jurisdiction.

2. Prevent accidental disruption of utility services to other facilities. Any and all shutdowns to occur during third shift.

3. Do not disrupt building control wiring or fire alarm wiring passing through the area of work.

F. Protect all existing surfaces from damages. Any damages to the existing surfaces requiring replacement and or repair shall be at Contractor's expense.

G. Construction areas shall be kept in a clean, safe and acceptable condition on a daily basis at all times and at completion of the Project.

H. Contractor is responsible for removing all debris off the site daily, including all costs associated with waste containers and proper disposal of waste.

I. Vendor is to have all equipment necessary to perform the installation and service including, tools, staging, lift truck, etc. No CCRI equipment or tools will be available.

J. A Conex box is allowed for storage on site. Location to be determined.

K. The College operations cannot be disrupted.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTIONS (Not Applicable)

END OF SECTION 01 11 00

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Schedule of Values.

B. Change procedures.

C. Procedures for preparation and submittal of Applications For Payment.

D. Defect Assessment.

E. Sales Tax Exemption.

F. Warranty Inspection Retainage.

1.02 RELATED SECTIONS

A. Document 00 72 00 - General Conditions: Progress Payments and Final Payment.

C. Section 01 33 00 – Submittal Procedures.

D. Section 01 77 99 – Closeout Procedures and Submittals: Final Payment.

1.03 SCHEDULE OF VALUES

A. Submit typed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet. Contractor's standard form or electronic media printout will be considered.

B. Submit Schedule of Values in duplicate within 15 days after date of receipt of a Purchase Order from the State Division of Purchases.

C. FORMAT: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify site mobilization, bonds and insurance and General Conditions.

D. Include in each line item, the amount of Allowances specified in this Section. For Unit Cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

E. Include within each line item, a directly proportional amount of Contractor's overhead and profit.

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

1.04 CHANGE PROCEDURES

A. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on AIA Form G710 Architect's Supplemental Instructions 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. 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.

G. CONSTRCTION CHANGE MARK-UP: Mark-ups on changes shall be 5% for General Contractor, 5% for Subcontractor. GC will receive 5% on Subcontractor costs.

H. 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.

I. 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.

J. CHANGE ORDER FORMS: AIA G701 Change Order.

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

L. CORRELATION OF CONTRACTOR SUBMITTALS

1. Promptly revise the Schedule of Values and the Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

2. Promptly revise Progress Schedules to reflect any change in Contract Time. Revise sub-schedules to adjust times for any other items of Work affected by the change and resubmit.

3. Promptly enter changes in the Project Record Documents.

1.05 ADMINISTRATIVE SUBMITTALS

A. APPLICATION FOR PAYMENT: In accordance with the General Conditions and as specified herein.

B. FINAL APPLICATION FOR PAYMENT: As specified herein.

1.06 SUBMITTAL PROCEDURES

A. Submit three copies of each Application for Payment.

B. Submit an updated construction schedule with each Application for Payment.

C. PAYMENT PERIOD: Submit at intervals stipulated in the Agreement.

D. Submit under transmittal letter specified in Section 01 33 00.

E. Submit lien waivers.

1.06 FORMAT

A. AIA G702 - Application and Certificate for Payment, including continuation sheets when required.

B. 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. Reference the General Conditions.

1.07 SUBSTANTIATING DATA

A. When Architect requires substantiating information, submit data justifying dollar amounts in question.

B. 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.

1.08 PREPARATION OF APPLICATIONS

A. Present required information in typewritten form or on electronic media printout.

B. Execute certification by signature of authorized officer.

C. 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.

D. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.

E. Prepare Application for Final Payment as specified in Section 01 77 99.

1.09 PAYMENT

A. GENERAL: Progress payment requests shall be submitted monthly as specified in the General Conditions.

B. Payment for Lump Sum Work covers all Work necessary to furnish, install and/or complete the Work of the Contract.

C. Payment for unit price items covers all Work necessary to furnish, install and/or complete the item.

D. Payment for equipment, materials and labor for items not included on the Bid shall be considered incidental and no separate payment will be made.

1.10 DEFECT ASSESSMENT

A. Replace the Work or portions of the Work not conforming to the 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.

1. The defective work may remain but the unit sum will be adjusted to a new sum at the discretion of the Architect.

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

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

C. Payment will not be made for following:

1. Loading, hauling, and disposing of rejected products.

2. Quantities of material wasted or disposed of in manner not acceptable.

3. Products determined as unacceptable before or after placement.

4. Material not completely unloaded from transporting vehicle.

5. Products remaining on hand after completion of the Work.

6. Material remaining on hand after completion of Work.

1.11 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

A. FINAL PAYMENT: Will be made only for materials incorporated into the Work in the Contract; no partial payments shall be made for equipment or materials delivered to the site but not used.

1.12 FINAL APPLICATION FOR PAYMENT

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

B. Prior to submitting final application, make acceptable delivery of required documents.

1.13 SALES TAX EXEMPTION

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

1. Obtain Sales Tax Exemption Certificate number from Owner.

2. Place Exemption Certificate number on invoice for materials permanently incorporated in the Work of the Project.

3. Furnish copies of invoices to Owner.

4. Upon completion of Work, file a notarized statement with Owner that all purchases made under exemption certificate were entitled to be exempt.

5. Pay legally assessed penalties for improper use of Exemption Certificate number.

C. Prior to submitting final application, make acceptable delivery of required documents.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01 29 00

SECTION 01 30 00
ADMINISTRATIVE PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Site Administration.

B. Coordination and project conditions.

C. Pre-construction meeting.

D. Site mobilization meeting.

E. Progress meetings.

F. Pre-installation meetings.

1.02 SITE ADMINISTRATION

A. Maintain a Daily Attendance Log to include the names of all project employees and guests to the site. The log sheets must clearly indicate the Project Name, and the name of the General Contractor. Each line in the log should allow for the name of that employee, the employee's job title (use terminology used by prevailing wage job title), and the name of that employee's employer. Each guest signing the log should indicate a brief description of the reason for the visit and the guest's employer or organization.

1.03 COORDINATION AND PROJECT CONDITIONS

A. Coordinate the scheduling, submittals and the Work of the various Sections of the Project Manual to ensure an efficient and orderly sequence of the installation of interdependent construction elements.

B. Coordinate the scheduling, submittals and the Work of the various Sections of the Project Manual to ensure an efficient and orderly sequence of the installation of interdependent construction elements.

C. Coordinate the space requirements, supports and installation of the electrical Work. Utilize spaces efficiently to maximize accessibility for other installations, maintenance or repairs.

D. Coordinate the completion and clean up of the Work of the separate Sections in preparation for Substantial Completion.

1.04 PRE-CONSTRUCTION MEETING

A. The Contractor will schedule a meeting after a Purchase Order is issued to the Contractor by the CCRI Department of Purchasing.

B. ATTENDANCE REQUIRED: Owner, Architect and Contractor.

C. AGENDA:

A. Distribution of the Contract Documents.

B. Submission of a list of Subcontractors, a list of products, Schedule of Values and a Progress Schedule.

C. Designation of personnel representing the parties in the Contract, and the Architect.

D. The procedures and processing of field decisions, submittals, substitutions, Applications for Payment, Proposal Requests, Change Orders and Contract Closeout procedures.

E. Scheduling.

F. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with two copies to the Architect, the Owner the participants and those affected by the decisions made.

1.05 SITE MOBILIZATION MEETING

The Contractor will schedule a meeting at the Project site prior to the Contractor's occupancy.

ATTENDANCE REQUIRED: Owner, Architect, Special Consultants, Contractor, Contractor's Superintendent and major Subcontractors.

AGENDA

1. Use of premises by the Owner and Contractor.

2. Owner's requirements and occupancy.

3. Security and housekeeping procedures.

4. Schedules.

5. Application for Payment procedures.

6. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with two copies to the Architect, the Owner the participants and those affected by the decisions made.

1.06 PROGRESS MEETINGS

A. Contractor shall schedule and administer the meetings throughout the progress of the Work at weekly or no more than monthly intervals.

B. Make arrangements for the meetings, prepare the agenda with copies for the participants and preside at the meetings.

C. ATTENDANCE REQUIRED: Contractor's Superintendent, major Subcontractors and suppliers, Owner and Architect as appropriate to the agenda topics at each meeting.

D. AGENDA

A. Review approval of minutes of previous meeting.

B. Review of Work progress since previous meeting.

C. Field observations, problems and decisions.

D. Problems that impede construction schedule.

E. Review of off-site fabrication, delivery schedules.

F. Maintenance of Progress Schedule.

G. Corrective measures and procedures to regain projected schedule.

H. Progress schedule during succeeding work period.

I. Maintenance of quality and Work standards.

J. Effect of proposed changes and substitutions on the Progress Schedule and coordination.

K. Coordination of schedules.

L. Other business.

M. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with two copies to the Architect, the Owner the participants and those affected by the decisions made.

1.07 PRE-INSTALLATION MEETINGS

A. When required in the individual specification Sections, convene a pre-installation meeting at the site prior to commencing the Work of the Section.

B. Make arrangements for the meetings, prepare the agenda with copies for the participants and preside at the meetings.

C. Require attendance of the parties directly affecting, or affected by, the Work of the specific Section.

D. Prepare an agenda and preside at the meeting.

1. Review the conditions of the installation, preparation and installation procedures.

2. Review coordination with the related work.

3. Contractor to provide a mock-up installation at one of the Dental stations for review prior to installing all supports and arms.

4. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with two copies to the Architect, the Owner the participants and those affected by the decisions made.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTIONS (Not Applicable)

END OF SECTION 01 30 00

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittal procedures.

B. Construction Progress Schedules.

C. Proposed Products List.

D. Product data and shop drawings.

E. Samples.

F. Design data.

G. Test Reports.

H. Certificates.

I. Manufacturer's instructions.

J. Manufacturer's field reports.

K. Architect's action.

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. MASTER LIST SUBMITTAL

1. Submit a Master List of the required submittals with a proposed date for each item to be submitted.

2. Show the date the submittal was sent, days since submittal was sent, status of submittal, date submittal was received in return and any date associated with re-submittals.

3. Update Master List with each submission and response.

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

C. 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.

D. 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. Submittals will be accepted via E-mail transmission.

2. 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.

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; resubmittals to have original number with an alphabetic suffix.

E. 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.**

F. 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.

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

H. 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.

I. 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.

J. 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.

K. 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 resubmittal, 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 Five (5) calendar days for the Architect's initial processing of each submittal, excluding delivery tome from and to the Contractor. 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 Two (2) 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.

L. 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 "Project Closeout" and to individual Sections of these specifications for specific submittal requirements of project closeout information, materials, tools and similar items.

5. RECORD DOCUMENTS: Furnish set of original documents as maintained on the project site.

6. 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.

1.04 CONSTRUCTION PROGRESS SCHEDULES

A. Submit preliminary outline Schedules within 5 days after the receipt of a Purchase Order from CCRI Department of Purchasing for coordination with Owner's requirements. After being reviewed, submit detailed Schedules within 2 days modified to accommodate the revisions recommended by the Architect.

B. Show a complete sequence of construction by activity, identifying the Work of separate stages and other logically grouped activities. Indicate the early and late start, the early and late finish, float dates and duration. All work shall take place after school hours.

1.05 PRODUCT DATA AND SHOP DRAWINGS

A. Submit for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents.

B. Submit the number of copies which the Contractor requires plus two copies the Architect will retain. For shop drawings, submit in the form of 4 opaque reproductions.

C. Should contractor choose to e-mail submittals, contractor will be responsible for copies to be filed for the owner upon completion of the project.

D. Mark each copy to identify the applicable products, models, options and other data. Supplement the manufacturer's standard data to provide information specific to this Project.

E. Indicate the product utility and electrical characteristics, utility connection requirements and the location of utility outlets for service for functional equipment and appliances.

F. After being reviewed, distribute in accordance with the requirements of this Section and provide copies for Record Documents described in Section 01 78 39.

1.06 SAMPLES

A. Submit for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents.

B. Submit samples to illustrate the functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate the sample submittals for interfacing Work.

C. Include identification on each sample with full Project information.

D. Submit 2 samples of specified materials specified within the Construction Documents, in the individual specification Sections or as requested by the Architect. Architect will retain one sample.

E. Reviewed samples which may be used in the Work are indicated in the individual specification Sections.

F. Samples will not be used for testing purposes unless they are specifically stated to be in the individual specification Sections.

1.07 DESIGN DATA

A. Submit for the Architect's knowledge as Contract Administrator or for the Owner.

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

1.08 TEST REPORTS

A. Submit simultaneously to the Architect and the Owner.

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

1.09 CERTIFICATES

A. When specified in the individual specification Sections, submit certification by the manufacturer, installation/applicator subcontractor, or Contractor to the Architect, in the quantities specified for the Product Data.

B. Indicate that the material or product conforms to or exceeds the specified requirements. Submit supporting reference data, affidavits and certifications as appropriate.

C. Certificates may be recent or previous test results on the material or product, but must be acceptable to the Architect.

1.10 MANUFACTURER'S INSTRUCTIONS

A. When specified in the individual specification Sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting and finishing to the Architect for delivery to the Owner in the quantities specified for the Product Data.

B. Indicate the special procedures, the perimeter condition requiring special attention and the special environmental criteria required for application or installation.

1.11 MANUFACTURER'S FIELD REPORTS

A. Submit reports for the Architect's benefit as Contract Administrator or for the Owner.

B. Submit the report in duplicate within 30 days of observation to the Architect for information.

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

1.12 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 Five (5) 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 not exception to the intent of the Contract Documents. Fabrication of item may commence.

2. "Not Approved" or "Rejected" indicates nonconformance with the Contract requirements. The Architect will state the reasons for rejections.

3. "Revise and Resubmit" indicates nonconformance with the Contract requirements or that too many corrections would be necessary. No fabrication may commence.

4. "Furnish As Corrected" indicates that the Architect notes changes needed to the intent of the Contract Documents. The Contractor is responsible for completing all noted changes.

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.**

1.13 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.

1.14 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. Verification of Credentials and Licenses

C. Tolerances.

D. References.

1.02 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures: Submission of Manufacturers' Instructions and Certificates.

B. 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 VERIFICATION OF CREDENTIALS AND LICENSES

A. The Owner has implemented a project management oversight process and is applying it to current construction projects at CCRI.

B. An element of this oversight process is the verification that persons employed on the Project site have appropriate and current credentials and licenses in their possession, at the Project site, for the work they are performing.

C. Those persons without appropriate and current credentials and licenses will be subject to dismissal from the Project site.

1.05 TOLERANCES

A. Monitor the fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. When the manufacturers' tolerances conflict with the Contract Documents, request clarification from the Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.06 REFERENCES

A. For products or workmanship specified by association, trade or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable Codes.

B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by Code.

C. Obtain copies of standards when required by Contract Documents.

D. Should specified reference standards conflict with Contract Documents, request clarification for Architect before proceeding.

E. 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.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01 45 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. 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 within these specifications and construction documents or as specifically reviewed by the Architect.

1.5 **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.

1.7 **TRANSPORTATION AND HANDLING**

A. Arrange deliveries of products in accordance with construction and CCRI school schedules, coordinate to avoid conflict with Work, conditions at the site, CCRI daily operations 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, supplier, and CCRI.

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. Coordinate on site storage locations with CCRI staff.

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

C. Store products subject to damage by the elements in weathertight enclosures.

D. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

E. Storage within the building is limited. Contractor will not have full access to project area. Work shall be phased and 100% completed before moving on. Maintain all storage areas in a clean and orderly condition at all times.

1.09 EXTERIOR STORAGE

A. No products shall be stored outside.

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.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01 60 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. Final Cleaning.

J. Adjusting.

K. Operation and Maintenance Data.

L. Warranties.

M. Spare Parts and Maintenance Materials.

1.02 RELATED SECTIONS

A. 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/she 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. OPERATING AND MAINTENANCE DATA: Submit documentation as described in 1.12 below.

B. WARRANTIES, GUARANTEES AND BONDS: Submit documentation as described in 1.13 below.

C. SPARE PARTS AND MAINTENANCE MATERIALS FOR OWNER: Submit documentation as described in 1.14 below.

D. Contractor's affidavit of payment of debts and claims.

E. Contractor’s affidavit of release of liens.

F. Consent of surety to final payment.

G. Certificate of insurance for products and completed operations.

H. PROJECT RECORD DRAWINGS: Submit documentation as described in Section 01720.

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 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior surfaces exposed to view; remove temporary labels, stains and foreign substances, vacuum resilient, carpeted and soft surfaces.

C. Clean equipment and fixtures to a sanitary condition.

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

1.11 ADJUSTING

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

1.12 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; Three (3) bound and three (3) electronic copies. Bound copies in 8-1/2 x 11 inch text pages, three D side-ring capacity expansion binders with durable plastic covers. Prepare binder covers and electronic copies 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. Certificates.

3. Photocopies of warranties and bonds.

I. Submit final volumes revised, within ten days after final inspection.

1.13 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.

1.14 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.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01 78 00

SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

1. 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

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.

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. Submit documents to Architect with claim for final Application for Payment for review & comment.

1. Submit two electronic copies and one print copy of all documents.

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, two electronic copies and one print copy (electronic format (PDF, heavyweight bond). 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.

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 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 10 00 – Summary of Work: Use of the building.

1.03 DEFINITIONS

A. REMOVE: Remove and legally dispose of items except those indicated to be reinstalled, 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.

C.

1.06 PROJECT CONDITIONS

A. Owner will occupy the entire building immediately under and adjacent to the selective demolition area. Conduct selective demolition so that Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Owner assumes no responsibility for actual condition of building elements to be selectively demolished.

C. 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.

3. Arrange to shut off indicated utilities with utility companies.

4. 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.

5. 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 Divisions15 and 16 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.
See Section 07 31 13 Asphalt Shingles for new roofing requirements.

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

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Footings.
2. Foundation walls.
3. Piers.
4. Slabs-on-grade.

1.3 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.

1.4 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. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Qualification Data: For Installer and manufacturer.

E. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

F. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Steel reinforcement and accessories.
4. Curing compounds.
5. Floor and slab treatments.
6. Bonding agents.
7. Adhesives.
8. Vapor retarders.
9. Semi rigid joint filler.
10. Joint-filler strips.
11. Repair materials.

G. Field quality-control test and inspection reports.

1.5 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 1, 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.

1.6 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

2.1 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.

2.2 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.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

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 corrodible 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.

2.3 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.

2.4 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.

2.5 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.

B. Normal-Weight Aggregates: ASTM C 33. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

2.6 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

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.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M.
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.

a. Fortifiber Corporation; Moistop Plus.
b. Raven Industries Inc.; Dura Skrim 6.
c. Reef Industries, Inc.; Griffolyn Type-65.
d. 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.

2.7 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.
e. Kaufman Products, Inc.; Sure Cure 25 Emulsion.
f. Lambert Corporation; UV Safe Seal.
g. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.
h. Meadows, W. R., Inc.; Vocomp-30.
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.

2.8 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

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.

2.9 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. Exterior Concrete

1. Minimum Compressive Strength: 5,000 psi (27.6 MPa) at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: 4 inches (100 mm)**,** plus or minus 1 inch (25 mm).
4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch (38-mm) nominal maximum aggregate size.

B. Interior Concrete

1. Minimum Compressive Strength: 5,000 psi (27.6 MPa**)** at 28 days.
2. Minimum Cementitious Materials Content: 564 lb/cu. yd. (335 kg/cu. m).
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 ASTM 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

3.1 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.

3.2 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."

3.3 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).

3.4 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.

3.5 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 reinforcement and other embedded 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.

3.6 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.

3.7 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.

3.8 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.

3.9 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.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. 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 SECTIONS

A. Section 07 21 13 – Board Insulation.

B. Section 07 92 00 - Joint Sealants: Rod and sealant at control joints.

1.04 REFERENCES

A. ANSI/ASTM A82 - Cold-Drawn Steel Wire for Concrete Reinforcement.

B. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

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.

G. ASTM C144 - Aggregate for Masonry Mortar.ASTM C150 - Portland Cement.

H. ASTM C207 - Hydrated Lime for Masonry Purposes.

I. ASTM C270 - Mortar for Unit Masonry.

J. ASTM C387 - Packaged, Dry, Combined Materials, for Mortar and Concrete.

K. ASTM C404 - Aggregates for Masonry Grout.

L. ASTM C476 - Grout for Masonry.

M. ASTM C780 – Pre-construction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

N. ASTM C1019 - Method of Sampling and Testing Grout.

O. IMIAC - International Masonry Industry All-Weather Council: Recommended Practices and Guide Specification for Cold Weather Masonry Construction.

P. UL - Underwriters' Laboratories.

1.05 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.

1.06 QUALIFICATIONS

A. INSTALLER: Company specializing in performing the work of this Section with minimum ten years documented experience.

1.07 REGULATORY REQUIREMENTS

A. Conform to requirements for masonry construction.

1.08 IN PLACE MOCK-UP

A. Provide in place mock-up of each type of masonry veneer under provisions of Section 01 45 00.

B. Erect masonry veneer to 3 x 4 feet panel size for review, include specified mortar and accessories.

C. When accepted, mock-up will demonstrate minimum standard for the Work. Mock-up may remain as part of the Work.

1.09 PRE-INSTALLATION CONFERENCE

A. Convene one week prior to commencing work of this Section.

1.10 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.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Strictly comply with recommendations of the International Masonry Industry All-Weather Council –

Recommended Practices and Guide Specifications for Cold (Hot) Weather Masonry Construction; the Brick Institute of America –Technical Notes on Brick Construction, Parts 1, 2 and 3; The Portland Cement Assoc.

1.12 SEQUENCE AND SCHEDULING

A. Coordinate work under provisions of Section 01 31 13.

B. Coordinate the masonry work with brick veneer and installation of window anchors.

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 CMU: ASTM C90, Grade N, Type I - Moisture Controlled; normal weight. Color, size & texture to match existing at entry.

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 MASONRY: ASTM C270, Type S using the Property Method, 1800 psi compressive strength.

2.05 GROUT MIXES

A. MASONRY: 3,000 psi strength at 28 days; 7- 8 inches slump; premixed type in accordance with ASTM C94 or mixed in accordance with ASTM C476, fine and course 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

A. THROUGH-WALL FLASHING: York Manufacturing, Inc.: "Flash-Vent" asphalt-free copper fabric flashing/drainage system; 3 ounce weight; plastic termination bars for use when vertical termination does not occur in mortar joint.

B. GENERAL MASONRY FLASHING: York Manufacturing, Inc.: "Multi-Flash 500 Series" asphalt-free copper fabric flashing; 3 ounce weight.

C. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.10 ACCESSORIES

A. CONTROL JOINTS (CMU BACK-UP): Hohmann & Barnard, Inc. VS Series – PVC Control Joint; ASTM D2287 (Type PVC 654-4); #VS-Standard.

B. EXPANSION JOINTS (CMU VENEER): Hohmann & Barnard, Inc. NS – Closed Cell Neoprene Sponge; ASTM D1056, Grade 2A1; #NS-Standard; 3/8 inch x 3 inches.

C. WEEP HOLES: Hohmann & Barnard, Inc. QV – Quadro-Vent; polypropylene tested in accordance with ASTM D2240, D790B, D638 and D1238B; standard size; color as selected by Architect.

D. CLEANING SOLUTIONS: EaCo Chem "NMD 80 New Masonry Detergent".

E. 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.

3.06 MASONRY THROUGH-WALL FLASHINGS

A. Install through-wall flashing on top of masonry base course or at locations shown on the Drawings.

B. Seal all joints in flashings as required.

C. Install flashing in strict accordance with manufacturer's specifications.

3.07 GENERAL MASONRY FLASHINGS

A. Install flashing under masonry sills or at locations shown on the Drawings.

B. Provide 4 inch high end dams at all window sill locations. Seal all joints.

C. Install flashings in strict accordance with manufacturer's specifications.

3.08 WEEPS

A. Install weep holes in CMU veneer at 32 inches on center horizontally above through-wall flashing, above shelf angles and at top of walls.

3.09 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

3.11 ENGINEERED MASONRY

A. Lay masonry units with core cells vertically aligned and cavities between wythes clear of mortar and unobstructed.

B. Place mortar in masonry unit bed joints back 1/4 inch from edge of unit grout spaces, bevel back and upward. Permit mortar to cure 7 days before placing grout.

C. Reinforce masonry unit cores with reinforcement bars and grout as indicated.

D. Retain vertical reinforcement in position at top and bottom of cells and at intervals not exceeding 192 bar diameters. Splice reinforcement in accordance with Section 03 30 00.

E. Wet masonry unit surfaces in contact with grout just prior to grout placement.

F. Grout spaces less than 2 inches in width with fine grout using low lift grouting techniques. Grout spaces 2 inches or greater in width with course grout using low lift grouting techniques.

G. When grouting is stopped for more than one hour, terminate grout 1 1/2 inch below top of upper masonry unit to form a positive key for subsequent grout placement.

H. LOW LIFT GROUTING: Place first lift of grout to a height of 16 inches and rod for grout consolidation. Place subsequent lifts in 8 inch increments and rod for grout consolidation.

3.12 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Install preformed joint devices in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

C. Provide control and expansion joints at 20 feet on center, maximum, unless noted otherwise.

3.13 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.

3.15 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.

3.16 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 are strictly prohibited.

3.17 PROTECTION OF FINISHED WORK

A. Protect finished installation under provisions of Section 01 52 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

AHARONIAN & ASSOCIATES INC. - ARCHITECTS

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CCRI LISTON CAMPUS
New Two Floor Elevator
Providence, Rhode Island 02905 AA# 18021

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Structural steel.
2. Grout.

B. Related Sections include the following:

1. Division 1 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
2. Division 9 painting for surface preparation and priming requirements.

1.3 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.

1.4 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand ASD-service loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using AISC's "Manual of Steel Construction, Allowable Stress Design," Part 4.

1.5 SUBMITTALS

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

B. LEED Submittal:

1. Product Data for Credit MR 4.1. For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.

   a. Include statement indicating costs for each product having recycled content.

C. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, holes, and other pertinent data.
2. Include embedment drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
5. For structural-steel connections indicated to comply with design loads.

D. Welding certificates.

E. Qualification Data: For testing agency.

F. Mill Test Reports: Signed by manufacturers certifying that the following products comply with requirements:

1. Structural steel including chemical and physical properties.
2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
3. Direct-tension indicators.
4. Tension-control, high-strength bolt-nut-washer assemblies.
5. Shear stud connectors.
6. Shop primers.
7. Nonshrink grout.

G. Source quality-control test reports.

1.6 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."

B. Comply with applicable provisions of the following specifications and documents:

1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
2. AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2."
3. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design.
4. AISC's "Specification for the Design of Steel Hollow Structural Sections."
5. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.

1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.
2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.8 COORDINATION

A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. Wide Flange Section Structural Beams (w): ASTM A992

B. Plate and Bar: ASTM A 36.

C. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B**,** structural tubing.

D. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 or ASTM F 1852, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

a. Finish: Plain**.**

B. Unheaded Anchor Rods: ASTM F 1554.

1. Configuration: Straight and Hooked, a shown.
2. Nuts: ASTM A 563 (ASTM A 563M) hex carbon steel.
3. Plate Washers: ASTM A 36/A 36M carbon steel.
4. Washers: ASTM F 436 hardened carbon steel.
5. Finish: Plain.

C. Headed Anchor Rods: ASTM F 1554.

1. Nuts: ASTM A 563 hex carbon steel.
2. Plate Washers: ASTM A 36/A 36M carbon steel.
3. Washers: ASTM F 436 (ASTM F 436M) hardened carbon steel.
4. Finish: Plain.

D. Threaded Rods: ASTM F 1554.

1. Nuts: ASTM A 563 hex carbon steel.
2. Washers: ASTM F 436 hardened carbon steel.
3. Finish: Plain.

2.3 PRIMER

A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer.

2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."

1. Mark and match-mark materials for field assembly.
2. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces according to SSPC-SP 3, "Power Tool Cleaning."

2.6 SHOP CONNECTIONS

A. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

2.7 SHOP PRIMING

A. Shop prime steel surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
   1. SSPC-SP 3, "Power Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

   1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
   2. Apply two coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.

D. Painting: Apply a 1-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils (0.038 mm).

2.8 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.

   1. Fill vent holes and grind smooth after galvanizing.
   2. Galvanize lintels and shelf angles.

2.9 SOURCE QUALITY CONTROL

A. Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.

   1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Welded Connections: Shop-welded connections will be visually inspected.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify elevations of concrete-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.

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

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."

B. Base Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting base plates. Clean bottom surface of base plates.

1. Set base plates for structural members on wedges, shims, or setting nuts as required.
2. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and base plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.

E. Do not use thermal cutting during erection unless approved by Architect.

F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

1. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.

2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1.

D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

A. Touchup Painting: After installation, promptly clean, prepare, and prime or re-prime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories, base plates, and abutting structural steel.

1. Clean and prepare surfaces by SSPC-SP 3 power-tool cleaning.
2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

END OF SECTION 05 12 00

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SECTION 05 21 00
STEEL JOISTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Open-web, K-series steel joists.
2. KCS-type, open-web, K-series steel joists.

1.2 SUBMITTALS

A. Product Data: For each type of joist, accessory, and product indicated.

B. Shop Drawings: Showing layout, mark, number, type, location, and spacings of joists. Include joining and anchorage details, bracing, bridging, accessories; splice and connection locations and details; and attachments to other construction.

C. Welding certificates.

D. Mill certificates.

E. Research/Evaluation Reports: Evidence of steel joists' compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing joists similar to those indicated for this Project and with a record of successful in-service performance.

1. Manufacturer must be certified by SJI to manufacture joists complying with SJI standard specifications and load tables.

B. SJI Specifications: Comply with SJI's "Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders" (hereafter, "Specifications"), applicable to types of joists indicated.

C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle joists as recommended in SJI's "Specifications."

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel: Comply with SJI's "Specifications" for chord and web members.

B. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A, carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers; plain, uncoated.

C. High-Strength Bolts and Nuts: ASTM A 325 or ASTM F 1852, Type 1, heavy hex steel structural bolts, heavy hex carbon-steel nuts, and hardened carbon-steel washers; plain, uncoated.

2.2 PRIMERS

A. Primer: SSPC-Paint 15, Type I, red oxide; FS TT-P-636, red oxide; or manufacturer's standard shop primer complying with performance requirements of either of these red-oxide primers.

2.3 STEEL JOISTS

A. Manufacture steel joists according to SJI's "Specifications," with steel-angle top- and bottom-chord members, and as follows:

1. Manufacture K-series KCS-type steel joists according to "Standard Specifications for Open Web Steel Joists, K-Series," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.

B. Comply with AWS requirements and procedures for shop welding, appearance, quality of welds, and methods used in correcting welding work.

2.4 JOIST ACCESSORIES

A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span.

B. Bridging: Schematically indicated. Detail and fabricate according to SJI's "Specifications."

C. Supply miscellaneous accessories, including splice plates and bolts required by joist manufacturer to complete joist installation.

2.5 SHOP PAINTING

A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories by hand-tool cleaning, SSPC-SP 2 or power-tool cleaning, SSPC-SP 3.

B. Apply 1 shop coat of primer to joists and joist accessories to be primed to provide a continuous, dry paint film not less than 1 mil thick.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Do not install joists until supporting construction is in place and secured.

B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's written recommendations, and requirements in this Section.

C. Field weld joists to supporting steel bearing plates. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

D. Bolt joists to supporting steel framework using carbon-steel bolts, unless otherwise indicated.

E. Bolt joists to supporting steel framework using high-strength structural bolts, unless otherwise indicated. Comply with RCSC's Allowable Stress Design Specification for Structural Joints Using High-Strength Bolts for high-strength structural bolt installation and tightening requirements.

F. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

3.2 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Field welds will be visually inspected according to AWS D1.1

C. Correct deficiencies in Work that inspections and test reports have indicated are not in compliance with specified requirements.

D. Additional testing will be performed to determine compliance of corrected Work with specified requirements.

3.3 REPAIRS AND PROTECTION

A. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists, accessories, and abutting structural steel.

1. Clean and prepare surfaces by hand-tool cleaning, SSPC-SP 2, or power-tool cleaning, SSPC-SP 3.
2. Apply a compatible primer of the same type as the shop primer used on adjacent surfaces.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensures joist and accessories are without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 21 00

SECTION 05 31 00

STEEL DECK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Floor deck.
2. Roof deck.

1.2 SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Shop Drawings: Include layout and types of deck panels, anchorage details, reinforcing channels, pans, deck openings, special jointing, accessories, and attachments to other construction.

C. Product certificates.

D. Welding certificates.

E. Research/Evaluation Reports: Evidence of steel deck's compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

1.3 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

C. AISI Specifications: Calculate structural characteristics of steel deck according to AISI's "Specification for the Design of Cold-Formed Steel Structural Members."

PART 2 - PRODUCTS

2.1 FLOOR DECK

A. Steel Floor Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Non-Composite Steel Floor Deck," in SDI Publication No. 29.

1. Galvanizing: ASTM A 525; G90, 0.90 oz/sq. ft.
2. Deck Profile: Type C, wide rib.
3. Profile Depth: 1 inch.
4. Design Uncoated-Steel Thickness: 0.0239 inch

2.2 ROOF DECK

A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 29.

1. Galvanizing: ASTM A 525; G90, 0.90 oz/sq. ft.
2. Deck Profile: Type B, wide rib.
3. Profile Depth: 1-1/2 inches.
4. Design Uncoated-Steel Thickness: 0.0358 inch

2.3 ACCESSORIES

A. Accessories: Steel deck manufacturer's standard accessory materials, including mechanical fasteners, closure strips, pour stops, and closures for deck.

B. Shear Connectors: ASTM A 108, Grades 1010 through 1020 headed stud type, cold-finished carbon steel, AWS D1.1, Type B, with arc shields.

C. Galvanizing Repair Paint: High zinc-dust content paint for repair of damaged galvanized surfaces complying with Military Specifications MIL-P-21035 (Ships).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 29, manufacturer's written instructions, and requirements in this Section.

B. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

C. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

D. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to decking.

E. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of decking, and support of other work.

F. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

1. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

G. Roof Deck Accessories: Install sump pans ridge and valley plates, finish strips, cover plates, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld to substrate to provide a complete deck installation.

H. Repairs and Protection:

1. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.

3.2 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing agency to perform field quality-control testing.

B. Field welds will be subject to inspection.

C. Shear connector stud welds will be tested and inspected according to AWS D1.1.

D. Remove and replace work that does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.3 REPAIRS AND PROTECTION

A. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on surfaces of prime-painted deck immediately after installation, and apply repair paint.

B. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 31 00

CCRI LISTON CAMPUS
New Two Floor Elevator
Providence, Rhode Island 02905
AA# 18021

SECTION 05 40 00
COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Exterior non-load-bearing, curtain-wall framing.

2. All other light gage framing sizes and gages are as noted on construction documents and are to be installed per the manufacturer's requirements.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads without deflections greater than the following:

1. Exterior Non-Load-Bearing, Curtain-Wall Framing:
Horizontal deflection of **1/600** of the wall height where wall studs back up masonry veneers.
Horizontal deflection of **1/360** of the wall height where studs back up EIFS or wood siding veneers.

1.3 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Include layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners.

C. Mill certificates or test reports.

D. Welder certificates.

E. Research/evaluation reports.

1.4 QUALITY ASSURANCE

A. Comply with AISI's "Specification for the Design of Cold-Formed Steel Structural Members" for calculating structural characteristics of cold-formed metal framing.

B. Mill certificates signed by steel sheet producer or test reports from a qualified independent testing agency.

C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

D. Fire-Test-Response Characteristics: Where metal framing is part of a fire-resistance-rated assembly, provide framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by GA File Numbers in GA-600, "Fire Resistance Design Manual," or by design designations from UL's "Fire Resistance Directory" or from the listings of another testing agency.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Allied American Studco, Inc.
2. Angeles Metal Systems.
3. Clark Steel Framing Industries.
4. Consolidated Fabricators Corp.
5. Consolidated Systems, Inc.
6. Dale Industries, Inc.
7. Design Shapes in Steel.
8. Dietrich Industries, Inc.
9. Knorr Steel Framing Systems.
10. MarinoWare; Div. of Ware Industries, Inc.
11. Scafco Corp.
12. Steel Construction Systems.
13. Steel Developers, LLC.
14. Steeler, Inc.
15. Super Stud Building Products, Inc.
16. Unimast, Inc.
17. United Metal Products, Inc.

2.2 MATERIALS

A. Steel Sheet: ASTM A 653/A 653M, structural steel, G60 zinc coating, Grade 33 for minimum uncoated steel thickness of 0.0428 inch and less; Grade 50 for minimum uncoated steel thickness of 0.0538 inch and greater.

B. Roof Rafters: Manufacturer's standard steel studs, of web depths indicated, with stiffened flanges, complying with ASTM C 955, and as follows:

1. Depth: 10 inches
2. Minimum Uncoated-Steel Thickness: **0.0677 inch**. (14 gage)
3. Flange Width: 2 **inches**.
4. Section Properties: Sx = 2.800 in^3 Ix = 13.998 in^4 Mx = 82,155 in-lb.
5. Track: Manufacturer's standard U-shaped steel track, unpunched, with straight flanges, complying with ASTM C 955, manufacturer's standard flange width except where noted as deflection track on the contract drawings. Minimum uncoated-steel thickness to match steel studs

2.3 ACCESSORIES AND MISCELLANEOUS MATERIALS

A. Fabricate steel-framing accessories of the same material and finish used for framing members, with minimum yield strength of 33,000 psi, of manufacturer's standard thickness and configuration, unless otherwise indicated.

B. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123.

C. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel headless, hooked, bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.

D. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

E. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

F. Mechanical Fasteners: Corrosion-resistant-coated, self-drilling, self-threading steel drill screws.

G. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.

H. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

I. Thermal Insulation: ASTM C 665, Type I, unfaced mineral-fiber blankets produced by combining glass or slag fibers with thermosetting resins.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to ASTM C 1007, manufacturer's written recommendations, and requirements in this Section.

1. Cut framing members by sawing or shearing; do not torch cut.
2. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
3. Install framing members in one-piece lengths.

4. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed.
5. Install insulation in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
6. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

B. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

C. Non-Load-Bearing, Curtain-Wall Installation: Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure. Space studs as indicated; set plumb, aligns, and fastens both flanges of studs to track, unless otherwise indicated.

1. Isolate non-load-bearing steel framing from building structure with deflection track to prevent transfer of vertical loads while providing lateral support.
2. Install horizontal bridging in curtain-wall studs, spaced in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.
3. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtain-wall-framing system.

D. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

3.2 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing agency to perform field quality-control testing.

1. Field and shop welds will be subject to testing and inspection.
2. Remove and replace Work that does not comply with specified requirements.
3. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.

END OF SECTION 05 40 00

SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated ferrous metal items, galvanized and prime painted.

B. Refer to Schedule at end of this Section.

1.02 RELATED SECTIONS

A. Section 04 20 00 – Unit Masonry.

B. Section 06 10 00 – Rough Carpentry.

1.03 REFERENCES

A. ASTM A992 – W Shapes.

B. ASTM A36 - Structural Steel.

C. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.

D. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

E. ASTM A307 - Low-Carbon Steel Externally and Internally Threaded Fasteners.

F. ASTM A283 - Carbon Steel Plates, Shapes and Bars.

G. ASTM A325 - High Strength Bolts for Structural Steel Joints.

H. ASTM A386 - Zinc-Coating (Hot-Dip) on Assembled Steel Products.

I. ASTM A500 - Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

J. AWS D1.1 - Structural Welding Code.

K. AWS A2.0 - Standard Welding Symbols.

L. SSPC - Steel Structures Painting Council.

M. FS TT-P-641 - Primer Coating, Zinc Dust-Zinc Oxide (for Galvanized Surfaces).

1.04 SUBMITTALS

A. Submit shop drawings under provisions of Section 01 33 00.

B. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners and accessories.

C. Include erection drawings, elevations and details where applicable.

D. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.

E. Prepare shop drawings under direct supervision of a Professional Structural Engineer registered in the State of Rhode Island.

1.05 QUALIFICATIONS

A. WELDERS' CERTIFICATES: Submit certificates certifying welders employed on the work, verifying AWS qualification within the previous 12 months.

PART 2 PRODUCTS

2.01 MATERIALS

A. STEEL SECTIONS: ASTM A36, A992.

B. STEEL TUBING: ASTM A500, Grade B or ASTM A501.

C. PIPE: ASTM A53, Grade B, Schedule 40.

D. BOLTS, NUTS AND WASHERS: ASTM A307 or ASTM A325 galvanized to ASTM A153 for galvanized components.

E. WELDING MATERIALS: AWS D1.1; type required for materials being welded.

F. PLATES: ASTM A283.

G. PRIMER: SSPC 15, Type 1, Red Oxide for shop application and field touch-up.

H. TOUCH-UP PRIMER FOR GALVANIZED SURFACES: FS TT-P-641.

2.02 FABRICATION

A. Verify dimensions on site prior to shop fabrication.

B. Fabricate items with joints tightly fitted and secured.

C. Fit and shop assemble in largest practical sections for delivery to site.

D. Continuously seal joined members by continuous welds.

E. Grind exposed welds flush and smooth with adjacent finished surfaces. Ease exposed edges to small uniform radius.

F. EXPOSED MECHANICAL FASTENINGS:

1. Flush countersunk screws or bolts, unobtrusively located;

2. Consistent with design of component, except where specifically noted otherwise.

G. Make exposed joints butt tight, flush and hairline.

H. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.

2.03 FINISH

A. Clean surfaces of rust, scale, grease and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact bond with concrete or where field welding is required.

C. Prime paint items scheduled with one coat.

D. Galvanize items to minimum 1.25 oz/sq. ft. zinc coating in accordance with ASTM A386.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and ready to receive work.

B. Beginning installation means erector accepts existing conditions.

3.02 PREPARATION

A. Obtain Architect approval prior to site cutting or making adjustments not scheduled.

B. Clean and strip site primed steel items to bare metal where site welding is required.

C. Make provision for erection loads with temporary bracing.

D. Supply items required to be cast into concrete or embedded in masonry with setting templates to appropriate Sections.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Perform field welding in accordance with AWS D1.1.

C. After installation, touch-up field welds, scratched or damaged surfaces and surfaces not shop primed with primer, except surfaces to be in contact with concrete.

3.04 ERECTION TOLERANCES

A. MAXIMUM VARIATION FROM PLUMB: 1/4 inch per story, non-cumulative.

B. MAXIMUM OFFSET FROM TRUE ALIGNMENT: 1/4 inch.

3.05 SCHEDULE

A. The Schedule is a list of principal items only.

B. Provide and install items listed in Schedule or required for the work with anchorage and attachments necessary for installation.

C. LEDGE AND SHELF ANGLES, CHANNELS AND PLATES: Galvanized, primed and field paint finish.

D. HANDRAILS: As shown on Drawings; Primed and field paint finish.

E. Masonry lintels.

F. Stairs.

END OF SECTION 05 50 00

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rough carpentry, including but not limited to miscellaneous wood blocking and miscellaneous plywood.

1.02 RELATED SECTIONS

A. Section 06 20 00 - Finish Carpentry.

B. Section 09 21 16 – Gypsum Board Assemblies.

1.03 QUALITY ASSURANCE

A. Lumber Grading Rules and Wood Species to be in conformance with Voluntary Product Standard PS-20.

B. Grading rules of the following Associations apply to materials furnished under this Section.

1. Northeastern Lumber Manufacturer's Association, Inc.

2. Western Wood Products Association.

C. PLYWOOD GRADING RULES:

1. Softwood Plywood - Construction and Industrial: Product Standard PS-1.

2. Hardwood Plywood - Product Standard PS-51.

D. GRADE MARKS: Identify all lumber and plywood by official grade mark.

1. LUMBER: Grade stamp to contain symbol of grading agency, mill Number or name, grade of lumber, species or species grouping or combination designation, rules under which graded, where applicable and condition of seasoning at time of manufacture.

2. SOFTWOOD PLYWOOD: Appropriate grade trademark of the American Plywood Association.

a. Type, grade, class and Identification Index.

b. Inspection and testing agency mark.

E. REQUIREMENTS OF REGULATORY AGENCIES:

1. WORKING STRESSES: Softwood lumber, National Design Specification; National Forest Products Association.

2. PRESERVATIVE TREATED LUMBER AND PLYWOOD: American Wood Preservers Bureau, Quality Mark.

3. PRESSURE TREATED MATERIAL: American Wood Preservers Bureau Standards.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00:

1. PRESSURE TREATED WOOD: Submit certification by treating plant stating chemicals and process used, net amount of salts retained, and conformance with applicable standards.

2. PRESERVATIVE TREATED WOOD: Submit certification for water-borne preservative that moisture content was reduced to 19% maximum, after treatment.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Store all materials in area protected from weather. Store all materials a minimum of 6 inches above ground.

B. Protect sheet materials from corner breakage and other damage.

PART 2 PRODUCTS

2.01 MATERIALS

A. LUMBER

1. Dimensions specified are nominal.

2. MOISTURE CONTENT: Unseasoned or 19% maximum for lumber 2 inches or less nominal thickness.

3. SURFACE: Surface four sides (S4S), unless specified otherwise.

4. FRAMING LUMBER: Sizes shown on Drawings, any commercial softwood species; Grade No. 2.

5. FURRING AND GROUNDS: Minimum grade: No. 3 common.

6. All pieces in contact with concrete or masonry shall be pressure treated.

B. PLYWOOD

1. Comply with Prod. Std., PS 1; Bearing the mark of a recognized association or independent inspection agency that maintains continuing control over quality of plywood which identifies compliance by veneer grade, group number, span rating where applicable, and glue type.

2. SHEATHING: APA rated Exposure 1 or Exterior; panel grade CD or better; thickness as indicated on Drawings

3. PLYWOOD BACKING PANELS: For mounting electrical or telephone equipment provide fire-retardant treated plywood panels with grade designation APA-C-D PLUGGED INT, with exterior glue in thickness indicated, or if not otherwise shown, not less than 1/2 inch.

C. PRESERVATIVE TREATED WOOD PRODUCTS - IN AND ON MASONRY: Water-borne salt preservative - AWPB LP-2.

D. FIRE RETARDANT TREATED LUMBER AND PLYWOOD: Pressure impregnated with fire retardant chemicals in accordance with recommendations and quality control of Koppers Co., Inc., "Dricon" for interior work.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces to receive rough carpentry materials are prepared to exact grades and dimensions.

3.02 INSTALLATION - FRAMING, FURRING AND STRAPPING

A. Erect wood framing, furring, strapping and nailing members true to lines and levels. Do not deviate from true alignment more than ¼ inch.

B. Space members at 16 inches on center or as noted on the Drawings.

C. Construct members of continuous pieces of longest possible lengths.

3.03 INSTALLATION – SHEATHING

A. Conform to applicable requirements of APA 30K for installation of plywood or structural use panels.

3.04 BLOCKING

A. Blocking shall be provided as necessary for the application of sheathing, subflooring, wallboard and other materials or building items, and to provide fire stopping. Blocking shall be cut to fit between framing members and rigidly nailed thereto.

END OF SECTION 06 10 00

SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the General Conditions, Supplementary Conditions, and Division 1 General Requirements, apply to the Work of this Section.

B. Coordinate work of this Section with the work of the following Sections to properly execute the work in order to maintain the hourly ratings of the walls and floors.
1. Division 1 General Conditions
2. Division 22, 23 Mechanical, Plumbing
3. Division 26 Electrical Work.

1.02 REFERENCES

A. American Society for Testing and Materials Standards (ASTM):
1. ASTM E 814 - 88: Standard Test method For Fire Tests of Through-Penetration Firestops

B. Underwriters Laboratories Inc.
1. UL 1479 Fire Tests of Through-Penetration Firestops (Consult UL Fire Resistance Directory)

C. FM Global – Provide FM Global approved products.

1.03 DESCRIPTION

A. This Section describes the requirements for furnishing and installing firestopping for fire-rated construction, this includes:
1. All openings in fire-rated floors and wall assembles, both blank (empty) and those accommodating penetrating items such as cables, conduits, pipes ducts, etc.
2. Gaps (openings) between exterior curtain walls and the outer perimeter edge of the structural floor.
3. Openings at each floor level in shafts or stairwells.

B. Perform all work required, and furnish all materials necessary, to complete proper installation of Firestops and firestop systems in fire-rated walls, floors, and partitions, around penetrations of pipe, duct, cable, other electrical/mechanical devices or in blank openings. Refer to Architectural Drawings for locations of all fire-rated construction. All penetrations of fire-rated construction shall be firestopped in a manner which is acceptable to the authority having jurisdiction.

1.04 QUALITY ASSURANCE

A. Firestopping systems (materials and design) shall conform to both Flame (F) ard Temperature (T) ratings as required by local building code ard as tested by notionally accepted test agencies per ASTM E814 or UL 1479 fire tests in a configuration that is representative of field conditions. The F rating must be a minimum of one (1) hour but not less than the fire resistance rating of the assembly being penetrated. T rating when required by code authority shall be based on measurement of the temperature rise on

penetrating item(s). The fire test shall be conducted with a minimum positive pressure differential of 0.01 inches of water column.

B. Firestopping materials & systems must be capable of closing or filling through-openings created by 1) the burning or melting of combustible pipes, cable jacketing, or pipe insulation materials, or 2) deflection of sheet metal due to thermal expansion (electrical & mechanical duct work).

C. Firestopping material shall be asbestos free and shall not incorporate nor require the use of hazardous solvents.

D. Firestopping materials shall not shrink upon drying as evidenced by cracking or pulling back from contact surfaces.

E. Do not use any Firestop products which after curing dissolve in water.

F. All Firestopping materials shall be manufactured by one manufacturer (to the maximum extent possible).

G. Installation of Firestopping systems shall be performed by a contractor (or contractors) trained or approved by the Firestop manufacturer.

H. Equipment used shall be in accordance with the Manufacturer's written installation instructions.

1.05 SUBMITTALS

A. Submit manufacturer's product literature for each type of Firestop material to be installed. Literature shall indicated product characteristics, typical uses, performance and limitation criteria and test data.

B. Material Safety Data Sheets (MSDS): Submit MSDS for each firestop product.

C. Shop drawings: Show typical installation details for the methods of installation. Indicate which firestop materials will be used where and thickness for different hourly ratings

D. Submit manufacturer's installation procedures for each type of product.

E. Installer documentation: Submit document form Firestop Manufacturer wherein Manufacturer recognizes, i.e. approves Installer for said Manufacturer's Firestop products.

F. Upon completion, installer shall provide written certification that materials were installed in accordance with the manufacturer's installation instructions and details.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver material in the manufacturer's original, unopened containers or packages with the manufacturer's name, product identification, lot number, UL label, and mixing and installation instructions as applicable.

B. Store materials in the original, unopened containers or packages, and under conditions recommended by the manufacturer.

C. All Firestop materials shall be installed prior to expiration of shelf life.

1.07 PROJECT CONDITIONS

A. Conform to Manufacturer's printed instructions for installation and when applicable, curing in accordance with temperature and humidity. Conform to ventilation and safety requirements.

1.08 SEQUENCING

A. Coordinate this work as required with the work of other trades.

B. Firestopping shall precede gypsum board finishing.

1.09 PROTECTION

A. Where firestopping is installed at locations which will remain exposed in the completed work, provide protection as necessary to prevent damage to adjacent surfaces and finishes, and protect as necessary against damage from other construction activities.

PART 2 PRODUCTS

2.01 GENERAL

A. Firestopping materials and systems shall meet the requirements specified herein. Architect must approve in writing any alternates to the materials and systems specified herein.

B. All firestop products and systems shall be designed and installed so that the basic sealing system will allow the full restoration of the thermal and fire resistance properties of the barrier being penetrated with minimal repair if penetrants are subsequently removed.

2.02 ACCEPTABLE MANUFACTURERS

A. Specified Technologies Inc. (STI), Somerville, NJ 08876

B. Dow Corning Corp., Midland, Ml

C. 3M Fire Protection Products, St. Paul, MN

D. Nelson Firestop Products, Tulsa, OK

2.03 MATERIALS

A. Firestop Mortar
1. Specified Technologies Inc. SpecSeal Mortar

B. Firestop Sealants and Caulks
1. STI SpecSeal Sealant
2. Dow Corning Firestop Sealant No. 2000
3. 3M CP25WB- Caulk
4. Nelson Firestop Products - all listed sealants and caulks

C. Firestop Putty
1. STI SpecSeal Firestop Putty Bars & Pads
2. 3M MPS-2 Moldable putty Stix & Putty Pads
3. Nelson Firestop Products FSP Fireseal putty

D. Firestop Collars
1. STI SpecSeal Firestop Collars
2. 3M PPD Collars
3. Nelson Firestop Products PCS preformed collars

E. Wrap Strips
1. SpecSeal WrapStrip
2. 3M FS-1 95 Wrap Strip
3. Nelson Firestop Products wrap strips

F. Accessories
1. Forming/Damming Materials: Mineral fiberboard or other type recommended by Manufacturer.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions where Firestops are to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected by the contractor in a manner acceptable to the Architect.

B. Verify that environmental conditions are safe and suitable for installation of Firestop products.

3.02 CONDITIONS REQUIRING FIRESTOPPING

A. General
1. All through-penetrations, construction gaps, joints and through openings occurring in, adjacent to or between fire-rated floor/ceilings and walls shall be firestopped as per the requirements of this specification.
2. Insulation types specified in other Sections shall not be installed in lieu of firestopping material specified herein.
3. All combustible penetrants (I.E. non-metallic pipes or insulated metallic pipes) shall be firestopped using products and systems tested in a configuration representative of the field condition.

3.03 INSTALLATION

A. General
1. Installation of Firestops shall be performed by an applicator/installer qualified and trained by the manufacturer. Installation shall be performed in strict accordance with manufacturer's detailed installation procedures.
2. Apply Firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installations, and manufacturer's recommendations.
3. Coordinate with plumbing, mechanical, electrical and other trades to assure that all pipe, conduit, cable, and other items which penetrate fire-rated construction have been permanently installed prior to installation of Firestops. Schedule and sequence the work to assure that partitions and other construction which would conceal penetrations are not erected prior to the installation of Firestops.
4. Unless specified and approved, all insulations used in conjunction with through-penetrants shall remain intact and undamaged and may not be removed.

B. Dam Construction
1. When required to properly contain Firestopping materials within openings, damming or packing materials may be utilized. Combustible damming material must be removed after appropriate curing. Noncombustible damming materials may be left as a permanent component of the Firestop system.

C. Field Quality Control
1. Prepare and install firestopping systems in accordance with manufacturer's printed Instructions and recommendations.
2. Follow safety procedures recommended in the Material Safety Data Sheets.
3. Finish surfaces of firestopping which are to remain exposed in the completed work to a uniform and level condition.
4. All areas of work must be accessible until inspection by the applicable Code Authorities.
5. Correct unacceptable Firestops and provide additional inspection to verify compliance with this specification at no additional cost.

3.04 CLEANING

A. Remove spilled and excess materials adjacent to firestopping without damaging adjacent surfaces.

B. Leave finished work in neat, clean condition with no evidence of spillovers or damage to adjacent surfaces.

END OF SECTION

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 20 00 – Unit Masonry.

B. Section 07 21 13 – Board Insulation.

1.03 REFERENCES

A. ANSI/ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

B. ANSI/ASTM D1565 - Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Open-Cell Foam).

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.

X. 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: Tremco Spectrem 1

1. General purpose, high-performance, ultra-low modulus, one-part, moisture-curing, non-staining, construction grade silicone sealant.

2. Conforms to ASTM C920 Type S, Grade NS, Class 100/50, Use NT, G, M, A and O, ASTM C-1382 and US Federal Specifications TT-S-001543A (COM-NBS) Class A and TT-S-00230C (COM-NBS) Class A, Type II, EIMA Test Method 300.01 ASTM C-1382.

3. +100%/-50% joint movement capability in extension and compression.

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 Dymonic FC

1. Low modulus, one-component, fast moisture-cure, non-staining, polyurethane hybrid sealant.

2. Conforms to ASTM C920 Type S, Grade NS, Class 35, Use NT, M, A and O, and US Federal Specifications TT-S-00230C, Class A and TT-S-00230C (COM-NBS) Class A, Type II.

3. +/- 35% joint movement capability; low VOC, paintable.

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 1width/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: All exterior conditions unless noted otherwise.

TYPE 2: All interior conditions unless noted otherwise; at countertop and wall intersections.

TYPE 3: All exterior expansion and control joint conditions unless noted otherwise.

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.

B. Interior lite frames.

C. Louvers.

1.02 RELATED SECTIONS

A. Section 04 22 00 – Concrete Unit Masonry.

B. Section 07 92 00 - Joint Sealants.

C. Section 08 14 16 – Flush Wood Doors.

D. Section 08 71 00 - Door Hardware.

E. Section 08 81 00 – Glass Glazing.

F. Section 09 21 16 - Gypsum Board Assemblies.

G. Section 09 91 00 - Painting.

1.03 REFERENCES

A. ASTM A 366/A 366M - Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.

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.

C. ASTM A 924/A 924M - Standard Specification for General Requirements for Sheet Steel, Metallic-Coated 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.

H. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames. ANSI/DHI A115.IG - Installation Guide for Doors and Hardware.

I. NFPA 80 - Standard for Fire Doors and Windows.

J. SDI-105 - Recommended Erection Instructions for Steel Frames; Steel Door Institute.

K. SDI-117 - Manufacturing Tolerances for Standard Steel Doors and Frames; Steel Door Institute.

L. SDI-124 - Maintenance of Hollow Metal Doors and Frames; Steel Door Institute.

M. UL 10B - Standard for Fire Tests of Door Assemblies; Underwriters Laboratories Inc.

N. WHI - Intertek Testing Services 1nc./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.

1.6 **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. EXTERIOR DOORS: SDI-100 Grade II (Heavy duty), Model 4 (Seamless, composite construction).

B. INTERIOR DOORS: SDI-100 Grade II (Heavy duty), Model 4 (Seamless, composite construction).

C. EXTERIOR FRAMES: 16 gage thick material, core thickness; welded construction.

D. INTERIOR FRAMES: 18 gage thick material, core thickness; welded construction.

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: Insulation value of R-10 minimum.

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.

F. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.

G. Fabricate frames for masonry wall coursing with 4 inch head member.

2.07 FINISH

A. INTERIOR UNITS: A60 galvanized at wet locations only.

B. EXTERIOR UNITS: A60 galvanized.

C. PRIMER: Manufacturer's standard baked on type.

D. FINISH: Field finish in accordance with Section 09 91 00; Color as selected by Architect.

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

SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood doors, rated and non-rated.

1.02 RELATED SECTIONS

A. Section 08 11 13 – Hollow Metal Doors and Frames.

B. Section 08 71 00 - Door Hardware.

C. Section 08 80 00 – Glass Glazing.

D. Section 09 91 00 - Painting.

1.03 REFERENCES

A. ANSI/NWMA I.S.1 - Industry Standard For Wood Flush Doors (Includes Standards I.S.1.1. through I.I.S.1.7)

B. AWI - Quality Standards of Architectural Woodwork Institute.

C. ASTM E152 - Methods of Fire Tests of Door Assemblies.

D. NFPA 80 - Fire Doors and windows.

E. NFPA 252 - Standard Method of Fire Tests for Door Assemblies.

F. UL 10B - Fire Tests of Door Assemblies.

1.04 SUBMITTALS

A. Submit simultaneously with submittals from Sections 08 11 13 and 08 71 00.

B. Submit shop drawings and product data under provisions of Section 01 33 00.

C. Indicate door elevations, stile and rail reinforcement, internal blocking for hardware attachment and cutouts for glazing.

D. Submit samples under provisions of Section 01 33 00.

E. Submit two samples 2-1/2 x 2-1/2 inch in size illustrating construction and veneer.

1.05 QUALITY ASSURANCE

A. Conform to requirements of AWI [WDMA] Quality Standard Section 1300 Premium Grade.

B. FIRE DOOR AND PANEL CONSTRUCTION: Conform to ASTM E152, NFPA 252, UL 10B.

C. INSTALLED DOORS AND PANELS: Conform to NFPA 80 for fire rated class indicated.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable building and codes for fire rated doors and panels.

1.07 DELIVERY, STORAGE AND HANDLING

A. Protect products under provisions of Section 01 60 00.

B. Package, deliver and store doors in accordance with AWI requirements.

1.08 WARRANTY

A. Provide lifetime manufacturer's warranty under provisions of Section 01 77 99.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Eggers Industries

B. Fenestra Corporation.

C. Marshfield Door Systems, Inc.

2.02 DOOR TYPES

A. FLUSH INTERIOR DOORS: Solid core construction; wood veneer faces; fire rated as indicated on Drawings; Vision panels as shown on Drawings.

2.03 DOOR CONSTRUCTION (AWI QUALITY STANDARD)

A. SOLID, NON-RATED CORE: AWI Section 1300, PC-Particleboard.

B. FIRE RATED CORE: AWI Section 1300, mineral core.

C. Fully reinforced with inner blocking.

2.04 DOOR FACING

A. FACING QUALITY: AWI [WDMA] premium grade.

B. DOOR VENEER: Maple species wood, plain sliced with book matched grain. – or to match existing.

2.05 FINISH

A. Factory finish system including polyurethane clear coat; Satin gloss top coat (3 coats).

2.06 ADHESIVES

A. AWI Type II; AWI Type I in wet areas.

2.7 ACCESSORIES

A. GLASS STOPS: Metal type.

2.08 FABRICATION

A. Fabricate non-rated and rated doors in accordance with AWI Quality Standards requirements.

B. Fabricate fire rated doors in accordance with AWI Quality Standards ANSI/NWMA I.S.1 and to UL requirements. Attach fire rating label to door edge.

C. Provide flush doors with Triple-Ply, 1 1/2" laminated vertical stiles, 1 1/8" solid top and bottom rails.

D. Side, top and bottom edge strips of wood species to match face veneer.

E. Pre-machine doors for finish hardware.

F. Provide 5-1/2 inch top and bottom blocking and 10 inch intermediate blocking.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install doors in accordance with manufacturer's instructions.

B. Machine cut relief for hinges and closers and coring for handsets and cylinders.

C. Trim door width by cutting equally on both jamb edges.

D. Trim door height by cutting equally on top and bottom edges to a maximum of 3/4 inch.

E. Pilot drill and bolt holes. Use threaded through bolts for half surface hinges.

F. Prepare doors to receive finish hardware in accordance with AWI requirements.

G. Conform to AWI requirements for fit tolerances.

H. Coordinate installation of glass and glazing.

3.02 INSTALLATION TOLERANCES

A. MAXIMUM DIAGONAL DISTORTION: 1/16 inch measured with straight edge, corner to corner.

3.03 ADJUSTING AND CLEANING

A. Adjust for smooth and balanced door movement.

B. Clean adjacent soiled surfaces.

C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.04 PROTECTION

A. Protect finished installation under provisions of Section 01 60 00.

END OF SECTION 08 14 16

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 Sections 08 11 13 and 08 14 16 for door and frame preparation.

1.03 RELATED SECTIONS

A. Section 06 20 00 – Finish Carpentry.

B. Section 08 11 13 – Hollow Metal Doors and Frames.

C. Section 08 14 16 – Flush Wood Doors.

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.

E. NFPA 101 - Life Safety Code.

F. ANSI A117.1 (1998) - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.

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 Sections 08 11 13 and 08 14 16.

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.

F. Provide documentation that all fire rated material is FM Global approved.

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.
4. McKinney.

B. CYLINDRICAL LEVER LOCKSETS (Grade 1 quality)

1. Sargent Manufacturing Co.
2. Schlage Lock Co.
3. Yale Locks & Hardware.
4. Medeco.

C. FIRE EXIT AND PANIC DEVICES

1. Precision Hardware Inc.
2. Von Duprin Inc.

D. CLOSERS

1. LCN Closers.

E. PUSH/PULL , PROTECTION PLATES AND WALL BUMPERS

1. Rockwood.
2. H B Ives.

F. THRESHOLDS AND GASKETING (Silicone type)

1. Pemko.
2. Reese Enterprises, Inc.
3. Zero International, Inc.

G. 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 LOCKSETS/DEADBOLTS

A. LOCKSETS: Schlage ND Series;Handicapped accessible type; Spartan lever style.

B. DEADBOLTS: Medeco3 Maxum.

2.04 EXIT/PANIC DEVICES

A. RIM TYPE: Von Duprin 33A/35A Series.

2.05 CLOSERS DEVICES

A. Non-handed; delay action; variable backcheck: LCN 4040 Series.

B. Electric hold-open type: LCN 4040 Series.

2.06 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).

2.07 KEYING AND CORES

A. Provide construction cylinders and keys during construction period only.

B. DOOR LOCKS: Keyed as directed by Owner.

C. Supply 4 keys for each lock.

D. Detailed keying to be determined in consultation with the Architect and Owner.

2.08 FINISHES

A. FINISHES: 626 (US26D), unless noted otherwise.

PART 3 EXECUTIONS

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

SET #E2

3	Heavy duty continuous hinges
1	Rim exit device with exterior keyed lever trim, electric strike
1	Entry lockset lever trim
1	Cylinder with removable core
2	Closers
1 Set	Silencers
1	Relocated magnetic hold opens tied into Fire Alarm
1	Kickplates

END OF SECTION 08 71 00

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cold-rolled metal framing.

B. Exterior sheathing.

C. Acoustic insulation and sealant.

D. Gypsum board and cement board.

E. Taped and sanded joint treatment.

1.02 RELATED SECTIONS

A. Section 06 10 00 – Rough Carpentry: Wood blocking and framing.

B. Section 08 11 13 – Hollow Metal Doors and Frames.

C. Section 09 91 00 - Painting.

1.03 REFERENCES

A. ANSI/ASTM C36 - Gypsum Wallboard.

B. ANSI/ASTM C79 - Gypsum Sheathing Board

C. ANSI/ASTM C442 - Gypsum Backing Board.

D. ANSI/ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.

E. ANSI/ASTM C630 - Water Resistant Gypsum Backing Board.

F. ANSI/ASTM C645 - Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.

G. ANSI/ASTM C557 - Adhesive for Fastening Gypsum Wallboard to Wood Framing.

H. ANSI/ASTM C646 - Steel Drill Screws for the Application of Gypsum Sheet Material to Light Gage Steel Studs.

I. ANSI/ASTM C754 - Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.

J. GA-201 - Gypsum Board for Walls and Ceilings.

K. GA-21 - Recommended Specifications for Levels of Gypsum Board Finish.

L. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

M. ANSI/ASTM C645 - Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.

N. ANSI/ASTM E90 - Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

O. ANSI/ASTM E119 - Fire Tests of Building Construction and Materials.

P. ASTM C9977 – Gypsum Sheathing

Q. ASTM D3273 – Gypsum Sheathing

R. ASTM C79 – Gypsum Sheathing

S. ASTM C 36 – Impact Resistant Gypsum Board.

T. ASTM C 1396 – Impact Resistant Gypsum Board.

U. ANSI A108.11, American National Standard for Interior Installation of Cementitious Backer Units.

V. ASTM C 1325, Specification for Fiber-Mat Reinforced Non-Asbestos Cement Interior Substrate Sheets.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Provide product data on metal framing, gypsum board, joint tape and edge trim.

1.05 SYSTEM DESCRIPTION

A. Conform to applicable building and fire codes for fire rated assemblies.

B. FIRE RATING REQUIREMENTS: As noted on Drawings, in accordance with UL or WHI listed assembly No's.

1.06 QUALITY ASSURANCE

A. APPLICATOR: Company specializing in gypsum board systems work with 5 years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS - GYPSUM BOARD SYSTEM

A. United States Gypsum Company.

B. National Gypsum Company.

C. Georgia-Pacific Corporation.

D. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 FRAMING MATERIALS

A. FRAMING AND TRACKS: ANSI/ASTM C645; galvanized sheet steel, 26 gage thick, 'C' shape, with serrated faces.

B. FURRING AND ACCESSORIES: ANSI/ASTM C645.

2.03 GYPSUM BOARD MATERIALS

A. STANDARD GYPSUM BOARD: ANSI/ASTM C36; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.

B. FIRE RATED GYPSUM BOARD: ANSI/ASTM C36; fire resistive type, UL rated; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.

C. MOISTURE RESISTANT GYPSUM BOARD: ANSI/ASTM C630; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.

D. GYPSUM BACKING BOARD: ANSI/ASTM C442; standard and fire rated type; 5/8 inch thick; square edges, ends square cut, maximum permissible length.

E. Gypsum Sheathing Board: Dens Glass Gold Exterior Guard by G-P Gypsum; ANSI/ASTM C79; moisture resistant and fire resistant type, thickness as shown on Drawings; maximum permissible length, ends square cut, square edges; water resistant core, glass mat facings.

F. CEMENT BACKER BOARD: PermaBase Cement Board by National Gypsum Company.

1. Cementitious, water durable, board; surfaced with fiberglass reinforcing mesh on front and back; long edges wrapped.

2. Complying with ANSI A118.9 and ASTM C 1325.

3. Thickness as shown on Drawings; 4 ft. by 8 ft. sheets with tapered edges.

4. COMPRESSIVE STRENGTH: Not less than 2250 lbs. per sq. in. when tested in accordance with ASTM D 2394.

5. WATER ABSORPTION: Not greater than 8 percent when tested for 24 hours in accordance with ASTM C 473.

2.04 ACCESSORIES

A. ACOUSTICAL INSULATION BATTS: preformed fiberglass, friction fit type without integral vapor barrier membrane, thickness as indicated on Drawings.

B. ACOUSTICAL SEALANT: Non-hardening, non-skinning, for use in conjunction with gypsum board; USG Acoustical Sealant manufactured by United States Gypsum Company.

C. CORNER BEADS: Metal.

D. EDGE TRIM: GA 201 and GA 216; Type L and J exposed reveal bead as indicated.

E. JOINT MATERIALS: ANSI/ASTM C475; reinforcing tape, joint compound, adhesive, water, and fasteners.

F. FASTENERS: ANSI/ASTM C646.

G. ADHESIVE: ANSI/ASTM C557.

H. Provide all other miscellaneous metal framing and gypsum board components and accessory items as required to provide the wall systems as shown on the Drawings and as specified herein.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop Drawings.

B. Beginning of installation means acceptance of existing surfaces.

3.02 METAL STUD INSTALLATION

A. Install studding in accordance with ANSI/ASTM C754 and GA 201 and GA 216.

B. METAL FRAMING SPACING: 16 inches on center or as indicated on Drawings.

C. PARTITION HEIGHTS: Full height to floor or roof construction above unless noted otherwise on drawings.

D. Install additional bracing for partitions extending above ceiling.

E. DOOR OPENING FRAMING: Install double studs at door frame jambs. Install stud tracks on each side of opening, at frame head height and between studs and adjacent studs.

F. BLOCKING: Nail wood blocking to studs; bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware and shelves.

G. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work placed in or behind partition framing.

3.03 WALL FURRING INSTALLATION

A. Erect wall furring for direct attachment to concrete and concrete block walls.

B. Erect furring channels vertically. Secure in place on alternate channel flanges at 16 inches on center or as noted on Drawings.

C. Space furring channels maximum 16 inches on center, or as indicated on Drawings, not more than 4 inches from floor and ceiling lines.

D. Install thermal insulation vertically and hold in place with Z-furring channels spaced maximum 24 inches on center, not more than 3 inches at external corners and 12 inches at internal corners.

E. Erect free-standing metal stud framing tight to concrete and concrete masonry walls, attached by adjustable furring brackets in accordance with manufacturer's instructions.

3.04 FURRING FOR FIRE RATINGS

A. Install furring as required for fire resistance ratings indicated.

3.05 CEILING FRAMING INSTALLATION

A. Install in accordance with ANSI/ASTM C754, GA 201, GA 216 and manufacturer's instructions.

B. Coordinate location of hangers with other work.

C. Install ceiling framing independent of walls, columns and above-ceiling work.
D. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.

E. Laterally brace entire suspension system.

3.06 ACOUSTICAL ACCESSORIES INSTALLATION

A. Place acoustical insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions and tight to items passing through partitions.

3.07 GYPSUM BOARD INSTALLATION

A. Install gypsum board in accordance with GA 201 and GA 216.

B. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.

C. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.

D. DOUBLE LAYER APPLICATIONS: Use fire rated gypsum backing board for first layer, placed perpendicular to framing or furring members. Place second layer of fire rated gypsum board perpendicular to first layer. Offset joints of second layer from joints of first layer.

E. Erect exterior gypsum sheathing horizontally, with edges butted tight and ends occurring over firm bearing.

F. Use screws when fastening gypsum board to metal furring or framing.

G. Use screws when fastening gypsum board to wood furring or framing.

H. Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum ceiling board with sealant.

I. Place control joints consistent with lines of building spaces as indicated or as directed.

J. Place corner beads at external corners as indicated. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials or as indicated.

3.08 CEMENT BOARD INSTALLATION

A. Install cement board in accordance with the following reference standards and manufacturer's recommendations: ANSI A108.11 and “PermaBase Cement Board Construction Guide;” National Gypsum Co.

3.09 JOINT TREATMENT

A. Tape, fill and sand exposed joints, edges and corners to produce smooth surface ready to receive finishes.

B. Perform taping operation in accordance with manufacturer's instructions.

C. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

D. Taping, filling and sanding is not required at surfaces behind adhesive applied ceramic tile.

E. Provide Level [4] finish.

3.10 TOLERANCES

A. MAXIMUM VARIATION FROM TRUE FLATNESS: 1/8 inch in 10 feet in any direction.

END OF SECTION 09 21 16

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling systems.

B. Acoustical panels.

C. Non-fire rated and fire rated assemblies.

D. Perimeter trim.

1.02 RELATED SECTIONS

A. Division 23 Sections: Mechanical Equipment.

B. Division 26: Electrical.

1.03 REFERENCES

A. ASTM C635 - Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

B. ASTM C636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

C. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability

D. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire

E. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process

F. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

G. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

H. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials

I. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material

J. Armstrong Fire Guard Products

K. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint

L. ASTM E 1264 Classification for Acoustical Ceiling Products

1.04 QUALITY ASSURANCE

A. TOLERANCES

1. DEFLECTION

a. Suspension system components, hangers and fastening devices supporting light fixtures, ceiling grilles and acoustical units shall have a maximum deflection 1/360 of the span.

b. DEFLECTION TEST: ASTM C635.

c. STRUCTURAL CLASSIFICATION: Intermediate duty.

2. ALLOWABLE TOLERANCE OF FINISHED ACOUSTICAL CEILING SYSTEM: Level within 1/8" in 12'-0".

1.05 SUBMITTALS

A. Submit product data and samples under provisions of Section 01 33 00.

B. SAMPLES:

1. Submit two 12" x 12" samples of each acoustical unit.

2. Submit two 6" long samples of main and cross runners and splines.

C. MANUFACTURER'S LITERATURE: Manufacturer's recommendation for installation of suspension system.

D. MAINTENANCE MATERIAL: Furnish extra materials, two boxes of each acoustical material installed.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original, unopened, protective packaging, with manufacturer's labels indicating brand name, pattern, size, thickness and fire rating as applicable, legible and intact.

B. Store materials in original protective packaging to prevent soiling, physical damage or wetting.

C. Store cartons open at each end to stabilize moisture content and temperature.

D. Do not begin installation until sufficient materials to complete a room are received.

E. Provide to Owner (2) two additional cases of ceiling tiles, used as Attic Stock.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Maintain humidity of 65% - 75% in area where acoustical materials are to be installed, 24 hours before, during and 24 hours after installation.

B. Maintain a uniform temperature in the range of 55 F. - 70 F. prior to and during installation of materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. SUSPENSION SYSTEMS: Armstrong.

B. ACOUSTICAL MINERAL UNITS: Armstrong World Industries, United States Gypsum Corp.

C. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.02 SUSPENSION SYSTEMS

A. HANGERS: Wire hangers provided to be not less than 12 gauge galvanized soft annealed steel.

B. SYSTEMS:

1. **CG-1:** Exposed tee grid Armstong Prelude ML:

a. Main, cross and concealed members:

1. WEB DESIGN: Double, snap-in.
2. Cold-rolled steel, minimum thickness of 0.020 in., hot dipped galvanized coated and factory painted low-sheen Satin White.
3. EXPOSED FLANGE: 15/16 inch width.
   A) Edge molding, minimum 0.020 inch steel.
   b) COLOR: White
   c) COLOR: Chrome at Tin Ceiling location.

2. **CG-2**: Exposed tee grid Armstrong Prelude Plus XL:
1. WEB DESIGN: Double-web aluminum with pre-painted aluminum cap.
2. Baked Polyester paint
3. EXPOSED FLANGE: 15/16 inch width.
   a. Color: White

3. **CG-3:** Exposed tee grid Armstong Prelude XL Fire Guard.

A. Main, cross and concealed members:
1. WEB DESIGN: Double, snap-in.
2. Cold-rolled steel, minimum thickness of 0.020 in., hot dipped galvanized coated and factory painted low-sheen Satin White.
3. EXPOSED FLANGE: 15/16 inch width.
   A. Edge molding, minimum 0.020 inch steel.
   b. COLOR: White.

4. **CG-X:** Exposed tee grid to match existing adjacent.

2.03 ACOUSTICAL UNITS

A. ACT-1

1. PATTERN: Armstrong Cirrus Open Plan #556. – or to match existing.

2. SIZE: 24" x 24" x 5/8".

3. EDGE: Angled Tegular.

4. COLOR: White.

PART 3 EXECUTION

3.01 CONDITION OF SURFACES

A. Examine surfaces scheduled to receive suspended acoustical units for unevenness, irregularities, and dampness that would affect quality and execution of work.

3.02 INSTALLATION

A. SUSPENSION SYSTEM FOR TILE AND PANELS

1. HANGERS

   a. Select hanger wires 4 ft. o.c. each direction.

   b. Install additional hangers at ends of each suspension member, 6 in. from vertical surface.

   c. Do not splay wires more than 5 in. in a 4 ft. vertical drop.

   d. Hang system independent of walls, columns, ducts, pipes and conduit. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hanger and related carrying channels to span the extra distance.

   e. Wrap wire a minimum of three times horizontally, turning ends upward.

2. MAIN AND CROSS RUNNERS

   a. Space main runners at 4 ft. or 5 ft. o.c.; as indicated.

3. Wrap wire minimum of three times.

4. Level and square to adjacent walls.

   a. Space cross runners at 2 ft. o.c.

   b. Do not support lighting fixtures, other equipment or components on main runners or cross runners if light causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.

5. WALL MOLDING

   a. Install wall molding at intersection of suspended ceiling and vertical surfaces.

   b. Miter corners where wall moldings intersect or install corner caps.

   c. Attach to vertical surface with mechanical fasteners.

   d. Install spring spacers at wall molding to hold acoustical unit snug on flange of wall molding.

6. Install hold down clips on all tiles within 10 feet of an exterior door.

3.02 CLEANING

A. Clean soiled or discolored unit surfaces after installation.

B. Touch up scratches, abrasions, voids, and other defects in painted surfaces.

C. Remove and replace damaged, mismatched finish or improperly installed units.

END OF SECTION 09 51 00

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Resilient stair treads, risers and accessories.

1.02 RELATED SECTIONS

A. Section 03 00 00 - Concrete: Floor substrate surface.

B. Section 09 21 16 - Gypsum Board Assemblies.

1.03 REFERENCES

A. ASTM E84 - Surface Burning Characteristics of Building Materials.

B. FS L-F-475 - Floor Covering, Vinyl Surface (Tile and Roll), with Backing.

C. FS SS-T-312 - Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.

D. FS SS-W-40 - Wall Base: Rubber and Vinyl Plastic.

E. FS RR-T-650 - Treads, Metallic and Non-Metallic, Non- Skid.

1.04 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame spread rating requirements of 75 or less in accordance with ASTM E84.

1.05 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Provide product data on specified products, describing physical and performance characteristics, sizes, patterns, field and border designs and colors available.

C. Submit samples under provisions of Section 01 33 00.

D. Submit two samples 2-1/2 x 2-1/2 inches in size, illustrating color and pattern for each floor material specified.

E. Submit two 2-1/2 inch long samples of base and stair material for each color specified.
F. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit cleaning and maintenance data under provisions of Section 01 78 00.

B. Include maintenance procedures, recommended maintenance materials and suggested schedule for cleaning, stripping and re-waxing.

1.07 DELIVERY, STORAGE AND HANDLING

A. Store materials for three days prior to installation in area of installation to achieve temperature stability.

B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during and 24 hours after installation of materials.

1.08 EXTRA MATERIALS

A. Provide 50 sq ft of flooring and 25 lineal feet base materials of each material specified under provisions of Section 01 78 00.

PART 2 PRODUCTS

2.01 MANUFACTURERS - VINYL COMPOSITION TILE

A. Armstrong World Industries, Inc.

B. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.2 **FLOORING MATERIALS**

A. FIELD TILES: 12" x 12" x 1/8" vinyl composition tile; ASTM E648 - Class 1; ASTM 662 smoke - 450 or less.

B. ACCENT TILES: Allow for 25% of floor area to receive pattern.

C. VCT-1: Armstrong "Standard Excelon Imperial Texture", "Standard Excelon MultiColor" or "Excelon Companion Square" vinyl composition tile; series as selected by Architect.

1. ACCENT TILE: Armstrong "Excelon Feature Tile & Strip".

2.03 BASE MATERIALS

A. VB-01 : FS SS-W-40, Type 2 vinyl; 4 inch high; 1/8 inch thick; top set coved and toeless; Armstrong standard "Vinyl Wall Base".

B. BASE ACCESSORIES: Premolded end stops of same material, size and color as base.

2.04 RESILIENT STAIR TREAD SYSTEM

A. Stairs indicated to have resilient stair tread shall also include resilient risers, stringers landing mats and ramps.

B. RUBBER STAIR TREADS

1. Smooth.Johnsonite Heavy Duty "Safe-T-Grip" with two 1-inch abrasive strips recessed full tread width.

2. NOSING STYLE: As required.

3. NOSING HEIGHT: As required.

4. THICKNESS: ¼ INCH.

5. SIZE: Lengths and depths to fit each stair tread in one piece or, for treads exceeding maximum lengths manufactured, in equal length units.

C. RUBBER STAIR RISERS

1. TYPE: Smooth.

2. THICKNESS: 0.100 inch

3. SIZE: Heights to fit each stair riser in one piece.

D. RUBBER LANDING MAT

1. Johnsonite raised square pattern, 3/16-inch thick.

2. Thickness: match stair tread.

3. Size: Manufacturers standard.

E. COLOR AND PATTERN: As selected by Architect from manufacturer's full range of colors and patterns produced for rubber stair accessories complying with requirements indicated.

F. SUBSTITUTIONS: Under provisions of Section 01 60 00.

2.05 ACCESSORIES

A. SUBFLOOR FILLER: White premix latex; type recommended by flooring material manufacturer.

B. PRIMERS AND ADHESIVES: Waterproof; types recommended by flooring manufacturer.

C. TRANSITION STRIPS: Vinyl; profile to suit flooring transition conditions; finish and color as selected by Architect; Armstrong or approved equal.

D. SEALER AND WAX: Types recommended by flooring manufacturer.

2.06 COLORS

A. All colors shall be selected by Architect from Manufacturer’s standard selection for the specified series.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft, and are ready to receive Work.

B. Verify concrete floors are dry to a maximum moisture content of 7 percent and exhibit negative alkalinity, carbonization or dusting.

C. Beginning of installation means acceptance of existing substrate and site conditions.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with subfloor filler.

B. Apply, trowel and float filler to leave a smooth, flat, hard surface.

C. Prohibit traffic from area until filler is cured.

D. Vacuum clean substrate.

E. Apply primer to surfaces.

3.03 INSTALLATION – FLOORING MATERIALS

A. Install in accordance with manufacturers' instructions.

B. Mix tile from container to ensure shade variations are consistent.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Set flooring in place and press with heavy roller to attain full adhesion.

E. Lay flooring with joints parallel to building lines to produce symmetrical tile patterns.

F. Install tile to square grid pattern with all joints aligned. Allow minimum 1/2 full size tile width at room or area perimeter.

1. Pattern Drawings shall be provided by prior to installation.

G. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.

H. Install transition strips at unprotected or exposed edges, where flooring materials change and where flooring terminates.

I. Scribe flooring to walls, columns, cabinets, floor outlets and other appurtenances to produce tight joints.

J. Install transition strips where indicated or as required to suit project conditions. Fit joints tightly.

K. Set flooring in place; press with heavy roller to attain full adhesion.

3.04 INSTALLATION – BASE MATERIALS

A. Fit joints tight and vertical. Maintain minimum measurement of 48 inches between joints.

B. Miter internal corners. Install preformed base units at external corners.

C. Install base on solid backing. Bond tight to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.5 **PROTECTION**

A. Prohibit traffic on floor finish for 48 hours after installation.

3.06 CLEANING

A. Remove excess adhesive from floor, base and wall surfaces without damage.

B. Clean, seal and wax floor and base surfaces in accordance with manufacturer's instructions.

END OF SECTION 09 65 00

CCRI LISTON CAMPUS
New Two Floor Elevator
Providence, Rhode Island 02905 AA# 18021

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.

B. ASTM D2016 - Test Method for Moisture Content of Wood.

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 – Affected Products - All Wall Paint, primers, coatings and sealers. 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.
3. Sherwin Williams.
4. Pratt & Lambert

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. GYPSUM BOARD WALLS

PRIME COAT:	Alkyd Primer Seal
1ST FINISH COAT:	Alkyd Eggshell
2ND FINISH COAT:	Alkyd Eggshell

END OF SECTION 09 91 00

SECTION 14 24 00
Machine Room-Less Hydraulic Passenger Elevator

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Machine room-less hydraulic passenger elevators as shown and specified. Elevator work includes:
   1. Standard pre-engineered hydraulic passenger elevators.
   2. Elevator car enclosures, hoistway entrances and signal equipment.
   3. Operation and control systems.
   4. Jack(s).
   5. Accessibility provisions for physically disabled persons.
   6. Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity.
   7. Materials and accessories as required to complete the elevator installation.

B. Related Sections:
   1. Division 1 General Requirements: Meet or exceed all referenced sustainability requirements.
   2. Division 3 Concrete: Installing inserts, sleeves and anchors in concrete.
   3. Division 4 Masonry: Installing inserts, sleeves and anchors in masonry.
   4. Division 5 Metals:
      a. Providing hoist beams, pit ladders, steel framing, auxiliary support steel and divider beams for supporting guide-rail brackets.
      b. Providing steel angle sill supports and grouting hoistway entrance sills and frames.
   5. Division 9 Finishes: Providing elevator car finish flooring and field painting unfinished and shop primed ferrous materials.
   6. Division 16 Sections:
      a. Providing electrical service to elevators, including fused disconnect switches where permitted. (note: fused disconnect switch to be provided as part of elevator manufacture product, see section 2.11 Miscellaneous elevator components for further details.)
      b. Emergency power supply, transfer switch and auxiliary contacts.
      c. Heat and smoke sensing devices.
      d. Convenience outlets and illumination in control room (if applicable), hoistway and pit.
   7. Division 22 Plumbing
      a. Sump pit and oil interceptor.
   8. Division 23 Heating, Ventilation and Air Conditioning
      a. Heating and ventilating hoistways and/or control room.

C. Work Not Included: General contractor shall provide the following in accordance with the requirements of the Model Building Code and ANSI A17.1 Code. For specific rules, refer to ANSI A17.1, Part 3 for hydraulic elevators. State or local requirements must be used if more stringent. The cost of this work is not included in the thyssenkrupp Elevator's proposal, since it is a part of the building construction.

1. Elevator hoist beam to be provided at top of elevator shaft. Beam must be able to accommodate proper loads and clearances for elevator installation and operation.
2. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports and bracing including all setting templates and diagrams for placement.
3. Hatch walls require a minimum two hours of fire rating. Hoistway should be clear and plumb with variations not to exceed 1/2" at any point.
4. Elevator hoistways shall have barricades, as required.
5. Install bevel guards at 75° on all recesses, projections or setbacks over 2" (4" for A17.1 2000 areas) except for loading or unloading.
6. Provide rail bracket supports at pit, each floor and roof. For guide rail bracket supports, provide divider beams between hoistway at each floor and roof.
7. Pit floor shall be level and free of debris. Reinforce dry pit to sustain normal vertical forces from rails and buffers.
8. Where pit access is by means of the lowest hoistway entrance, a vertical ladder of non-combustible material extending 42" minimum, (48" minimum for A17.1-2000 areas) shall be provided at the same height, above sill of access door or handgrips.
9. All wire and conduit should run remote from the hoistways.
10. When heat, smoke or combustion sensing devices are required, connect to elevator control cabinet terminals. Contacts on the sensors should be sided for 12 volt D.C.
11. Install and furnish finished flooring in elevator cab.
12. Finished floors and entrance walls are not to be constructed until after sills and door frames are in place. Consult elevator contractor for rough opening size. The general contractor shall supply the drywall framing so that the wall fire resistance rating is maintained, when drywall construction is used.
13. Where sheet rock or drywall construction is used for front walls, it shall be of sufficient strength to maintain the doors in true lateral alignment. Drywall contractor to coordinate with elevator contractor.
14. Before erection of rough walls and doors; erect hoistway sills, headers, and frames. After rough walls are finished; erect fascias and toe guards. Set sill level and slightly above finished floor at landings.
15. To maintain legal fire rating (masonry construction), door frames are to be anchored to walls and properly grouted in place.
16. The elevator wall shall interface with the hoistway entrance assembly and be in strict compliance with the elevator contractor's requirements.
17. General Contractor shall fill and grout around entrances, as required.
18. All walls and sill supports must be plumb where openings occur.
19. Locate a light fixture (200 lx / 19 fc) and convenience outlet in pit with switch located adjacent to the access door.
20. Provide telephone line, light fixture (200 lx / 19 fc), and convenience outlet in the hoistway at the landing where the elevator controller is located. Typically this will be at the landing above the 1st floor. Final location must be coordinated with elevator contractor.
21. As indicated by elevator contractor, provide a light outlet for each elevator, in center of hoistway.

22. For signal systems and power operated door: provide ground and branch wiring circuits.
23. For car light and fan: provide a feeder and branch wiring circuits to elevator control cabinet.
24. Controller landing wall thickness must be a minimum of 8 inches thick. This is due to the controller being mounted on the second floor landing in the door frame on the return side of the door. For center opening doors, the controller is located on the right hand frame (from inside the elevator cab looking out). These requirements must be coordinated between the general contractor and the elevator contractor.
25. Cutting, patching and recesses to accommodate hall button boxes, signal fixtures, etc..

1.02 SUBMITTALS

A. Product data: When requested, the elevator contractor shall provide standard cab, entrance and signal fixture data to describe product for approval.

B. Shop drawings:
   1. Show equipment arrangement in the corridor, pit, and hoistway and/or optional control room. Provide plans, elevations, sections and details of assembly, erection, anchorage, and equipment location.
   2. Indicate elevator system capacities, sizes, performances, safety features, finishes and other pertinent information.
   3. Show floors served, travel distances, maximum loads imposed on the building structure at points of support and all similar considerations of the elevator work.
   4. Indicate electrical power requirements and branch circuit protection device recommendations.

C. Powder Coat paint selection: Submit manufacturer's standard selection charts for exposed finishes and materials.

D. Plastic laminate selection: Submit manufacturer's standard selection charts for exposed finishes and materials.

E. Metal Finishes: Upon request, standard metal samples provided.

F. Operation and maintenance data. Include the following:
   1. Owner's manuals and wiring diagrams.
   2. Parts list, with recommended parts inventory.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: An approved manufacturer with minimum 15 years of experience in manufacturing, installing, and servicing elevators of the type required for the project.
   1. The manufacturer of machines, controllers, signal fixtures, door operators cabs, entrances, and all other major parts of elevator operating equipment.
      a. The major parts of the elevator equipment shall be manufactured by the installing company, and not be an assembled system.
   2. The manufacturer shall have a documented, on-going quality assurance program.
   3. ISO-9001:2000 Manufacturer Certified
   4. ISO-14001:2004 Environmental Management System Certified
   5. LEED Gold certified elevator manufacturing facility.

B. Installer Qualifications: The manufacturer or an authorized agent of the manufacturer with not less than 15 years of satisfactory experience installing elevators equal in character and performance to the project elevators.

C. Regulatory Requirements:
   1. ASME A17.1 Safety Code for Elevators and Escalators, latest edition or as required by the local building code.
   2. Building Code: National.
   3. NFPA 70 National Electrical Code.
   4. NFPA 80 Fire Doors and Windows.
   5. Americans with Disabilities Act - Accessibility Guidelines (ADAAG)
   6. Section 407 in ICC A117.1, when required by local authorities
   7. CAN/CSA C22.1 Canadian Electrical Code
   8. CAN/CSA B44 Safety Code for Elevators and Escalators.
   9. California Department of Public Health Standard Method V1.1–2010, CA Section 01350

D. Fire-rated entrance assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ASTM E2074, CAN4-S104 (ULC-S104), UL10(b), and NFPA Standard 80. Provide entrance assembly units bearing Class B or 1 1/2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).

E. Inspection and testing:
   1. Elevator Installer shall obtain and pay for all required inspections, tests, permits and fees for elevator installation.
   2. Arrange for inspections and make required tests.
   3. Deliver to the Owner upon completion and acceptance of elevator work.

F. Sustainable Product Qualifications:
   1. Environmental Product Declaration:
      a. GOOD: If Product Category Rules (PCR) are not available, produce a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that has at least a cradle to gate scope.
      b. BEST: If Product Category Rules (PCR) are available, produce and publish an Environmental Product Declaration (EPD) based on a critically reviewed life-cycle assessment conforming to ISO 14044, with external verification recognized by the EPD program operator.
   2. Material Transparency:
      a. GOOD: Provide Health Product Declaration at any level
      b. BETTER: Provide Health Product Declaration (HPD v2 or later). Complete, published declaration with full disclosure of known hazards, prepared using the Health Product Declaration Collaborative's "HPD builder" on-line tool.
      c. BEST: Cradle to Cradle Material Health Certificate v3, Bronze level or higher.
   3. LEED v4 – Provide documentation for all Building Product Disclosure AND Optimization credits in LEED v4 for product specified.
   4. Living Building Challenge Projects: Provide Declare label for products specified.

1.04 DELIVERY, STORAGE AND HANDLING

A. Manufacturing shall deliver elevator materials, components and equipment and the contractor is responsible to provide secure and safe storage on job site.

1.05 PROJECT CONDITIONS

A. Temporary Use: Elevators shall not be used for temporary service or for any other purpose during the construction period before Substantial Completion and acceptance by the purchaser unless agreed upon by Elevator Contractor and General Contractor with signed temporary agreement.

1.06 WARRANTY

A. Warranty: Submit elevator manufacturer's standard written warranty agreeing to repair, restore or replace defects in elevator work materials and workmanship not due to ordinary wear and tear or improper use or care for 5 years extended after final acceptance.

1.07 MAINTENANCE

A. Furnish maintenance and call back service for a period of 12 months for elevator after completion of installation or acceptance thereof by beneficial use, whichever is earlier, during normal working hours excluding callbacks.
   1. Service shall consist of periodic examination of the equipment, adjustment, lubrication, cleaning, supplies and parts to keep the elevators in proper operation. Maintenance work, including emergency call back repair service, shall be performed by trained employees of the elevator contractor during regular working hours.
   2. Submit parts catalog and show evidence of local parts inventory with complete list of recommended spare parts. Parts shall be produced by manufacturer of original equipment.
   3. Manufacturer shall have a service office and full time service personnel within a 100 mile radius of the project site.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: Design based around thyssenkrupp Elevator’s endura Machine Room-Less hydraulic elevator.

2.02 MATERIALS, GENERAL

A. All Elevator Cab materials including frame, buttons, lighting, wall and ceiling assembly, laminates and carpet shall have an EPD and an HPD, and shall meet the California Department of Public Health Standard Method V1.1–2010, CA Section 01350 as mentioned in 1.03.9 of this specification.

B. Colors, patterns, and finishes: As selected by the Architect from manufacturer's full range of standard colors, patterns, and finishes.

C. Steel:
   1. Shapes and bars: Carbon.
   2. Sheet: Cold-rolled steel sheet, commercial quality, Class 1, matte finish.

3. Finish: Factory-applied baked enamel for structural parts, powder coat for architectural parts. Color selection must be based on elevator manufacture's standard selections.

D. Plastic laminate: Decorative high-pressure type, complying with NEMA LD3, Type GP-50 General Purpose Grade, nominal 0.050" thickness. Laminate selection must be based on elevator manufacture's standard selections.

E. Flooring by others.

2.03 HOISTWAY EQUIPMENT

A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded with a wood sub-floor. Underside of the platform shall be fireproofed. The car platform shall be designed and fabricated to support one-piece loads weighing up to 25% of the rated capacity.

B. Sling: Steel stiles bolted or welded to a steel crosshead and bolstered with bracing members to remove strain from the car enclosure.

C. Guide Rails: Steel, omega shaped, fastened to the building structure with steel brackets.

D. Guides: Slide guides shall be mounted on top and bottom of the car.

E. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on continuous channels fastened to the elevator guide rail or securely anchored to the pit floor. Provide extensions if required by project conditions.

F. Jack: A jack unit shall be of sufficient size to lift the gross load the height specified. Factory test jack to insure adequate strength and freedom from leakage. Brittle material, such as gray cast iron, is prohibited in the jack construction. Provide the following jack type: Twin post holeless telescopic 2-stage. Two jacks piped together, mounted one on each side of the car with each having two telescopic sections designed to extend in a synchronized manner when oil is pumped into the assembly. Each jack section will be guided from within the casing or the plunger assembly used to house the section. Each plunger shall have a high pressure sealing system which will not allow for seal movement or displacement during the course of operation. Each jack assembly shall have a check valve built into the assembly to allow for automatically re-syncing the two plunger sections by moving the jack to its fully contracted position. The jack shall be designed to be mounted on the pit floor or in a recess in the pit floor. Each jack section shall have a bleeder valve to discharge any air trapped in the section..

G. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the floor landings and correct for over travel or under travel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load.

H. Wiring, Piping, and Oil: Provide all necessary hoistway wiring in accordance with the National Electrical Code. All necessary code compliant pipe and fittings shall be provided to connect the power unit to the jack unit. theoiltype

I. Pit moisture/water sensor located approximately 1 foot above the pit floor to be provided. Once activated, elevator will perform “flooded pit operation”, which will run the car up to the designated floor, cycle the doors and shut down and trip the circuit breaker shunt to remove 3 phase power from all equipment, including pit equipment.

J. Motorized oil line shut-off valve shall be provided that can be remotely operated from the controller landing service panel. Also a means for manual operation at the valve in the pit is required.

2.04 POWER UNIT

A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit located in the elevator pit consisting of the following items:
   1. NEMA 4/Sealed Oil reservoir with tank cover including vapor removing tank breather
   2. An oil hydraulic pump.
   3. An electric motor.
   4. Electronic oil control valve with the following components built into single housing; high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and electro-magnetic controlling solenoids.

B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.

C. Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating – motors shall be capable of 80 starts per hour with a 30% motor run time during each start.

D. Oil Control Unit: The following components shall be built into a single housing. Welded manifolds with separate valves to accomplish each function are not acceptable. Adjustments shall be accessible and be made without removing the assembly from the oil line.
   1. Relief valve shall be adjustable and be capable of bypassing the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve.
   2. Up start and stop valve shall be adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and up stops.
   3. Check valve shall be designed to close quietly without permitting any perceptible reverse flow.
   4. Lowering valve and leveling valve shall be adjustable for down start speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" starts and stops. The leveling valve shall be designed to level the car to the floor in the direction the car is traveling after slowdown is initiated.
   5. Provided with constant speed regulation in both up and down direction. Feature to compensate for load changes, oil temperature, and viscosity changes.
   6. Solid State Starting: Provide an electronic starter featuring adjustable starting currents.
   7. A secondary hydraulic power source (powered by 110VAC single phase) must be provided. This is required to be able to raise (reposition) the elevator in the event of a system component failure (i.e. pump motor, starter, etc.)

8. Oil Type: Provide a zinc free, inherently biodegradable lubricant formulated with premium base stocks to provide outstanding protection for demanding hydraulic systems, especially those operating in environmentally sensitive areas.

2.05 HOISTWAY ENTRANCES

A. Doors and Frames: Provide complete hollow metal type hoistway entrances at each hoistway opening bolted\knock down construction.
   1. Manufacturer's standard entrance design consisting of hangers, doors, hanger supports, hanger covers, fascia plates (where required), sight guards, and necessary hardware.
   2. Main landing door & frame finish: ASTM A1008 steel panels, factory applied powder coat finish.
   3. Typical door & frame finish: ASTM A 366 steel panels, factory applied powder coat finish.

B. Integrated Control System: the elevator controller to be mounted to hoistway entrance above 1st landing. The entrance at this level, shall be designed to accommodate the control system and provide a means of access to critical electrical components and troubleshooting features. See section 2.09 Control System for additional requirements.

C. At the controller landing, the hoistway entrance frame shall have space to accommodate and provide a lockable means of access (group 2 security) to a 3 phase circuit breaker. See section 2.11 Miscellaneous Elevator Components for further details

D. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code.

E. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door.
   1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
   2. Hangers: Provide an adjustable device beneath the track to limit the up-thrust of the doors during operation.
   3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.

F. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum.

2.06 PASSENGER ELEVATOR CAR ENCLOSURE

A. Car Enclosure:
   1. Walls: Cab type a steel shell design, reinforced cold-rolled steel with an applied panel design. The applied panels design, shall be arranged vertically on wood core panels covered on both sides with high pressure plastic laminate.
      a. Rear Wall: Full Glass
   2. Reveals and frieze: Factory applied powder coat
   3. Canopy: Cold-rolled steel with hinged exit.
   4. Ceiling: Suspended type, LED lighting with translucent diffuser mounted in a metal frame. Framework shall be finished with a factory applied powder coat finish.

5. Cab Fronts, Return, Transom, Soffit and Strike: Provide panels faced with No. 4 brushed stainless steel
6. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic sliding guides.
   a. Door Finish: Stainless steel panels: No. 4 brushed finish.
   b. Cab Sills: Extruded aluminum, mill finish.
7. Handrail: Provide 1.5" diameter cylindrical metal on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, No. 4 brushed finish.
8. Ventilation: Manufacturer's standard exhaust fan, mounted on the car top.
9. Protection pads and buttons: Not required

B. Car Top Inspection: Provide a car top inspection station with an "Auto-Inspection" switch, an "emergency stop" switch, and constant pressure "up and down" direction and safety buttons to make the normal operating devices inoperative. The station shall give the inspector complete control of the elevator. The car top inspection station shall be mounted in the door operator assembly.

2.07 DOOR OPERATION

A. Door Operation: Provide a direct or alternating current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. The door control system shall be digital closed loop and the closed loop circuit shall give constant feedback on the position and velocity of the elevator door. The motor torque shall be constantly adjusted to maintain the correct door speed based on its position and load. All adjustments and setup shall be through the computer based service tool. Door movements shall follow a field programmable speed pattern with smooth acceleration and deceleration at the ends of travel. The mechanical door operating mechanism shall be arranged for manual operation in event of power failure. Doors shall automatically open when the car arrives at the landing and automatically close after an adjustable time interval or when the car is dispatched to another landing. AC controlled units with oil checks, or other deviations are not acceptable.
   1. No Un-Necessary Door Operation: The car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as a dispatch car.
   2. Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated.
   3. Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car's current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel shall reverse and the door shall reopen to answer the other call.
   4. Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door closing is prevented for a field programmable time, a buzzer shall sound. When the obstruction is removed, the door shall begin to close at reduced speed. If the infra-red door protection system detects a person or object while closing on nudging, the doors shall stop and resume closing only after the obstruction has been removed.

5. Door Reversal: If the doors are closing and the infra-red beam(s) is interrupted, the doors shall reverse and reopen. After the obstruction is cleared, the doors shall begin to close.
6. Door Open Watchdog: If the doors are opening, but do not fully open after a field adjustable time, the doors shall recycle closed then attempt to open six times to try and correct the fault.
7. Door Close Watchdog: If the doors are closing, but do not fully close after a field adjustable time, the doors shall recycle open then attempt to close six times to try and correct the fault.
8. Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close.

B. Door Protection Device: Provide a door protection system using microprocessor controlled infra-red light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen.

2.08 CAR OPERATING STATION

A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in an integral swing return panel requiring no applied faceplate. Wrap return shall have a No. 4 brushed stainless steel finish. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons that illuminate using long lasting LED's shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for car light and accessories shall be provided.

B. Emergency Communications System: Integral phone system provided.

C. Auxiliary Operating Panel: Not Required

D. Column Mounted Car Riding Lantern: A car riding lantern shall be installed in the elevator cab and located in the entrance. The lantern, when illuminated, will indicate the intended direction of travel. The lantern will illuminate and a signal will sound when the car arrives at a floor where it will stop. The lantern shall remain illuminated until the door(s) begin to close.

E. Special Equipment: Not Applicable

2.09 CONTROL SYSTEMS

A. Controller: Shall be integrated in a hoistway entrance jamb. Should be microprocessor based, software oriented and protected from environmental extremes and excessive vibrations in a NEMA 1 enclosure. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings.

B. Service Panel – to be located outside the hoistway in the controller entrance jamb and shall provide the following functionality/features:
   1. Access to main control board and CPU

2. Main controller diagnostics
3. Main controller fuses
4. Universal Interface Tool (UIT)
5. Remote valve adjustment
6. Electronic motor starter adjustment and diagnostics
7. Operation of pit motorized shut-off valve with LED feedback to the state of the valve in the pit
8. Operation of auxiliary pump/motor (secondary hydraulic power source)
9. Operation of electrical assisted manual lowering
10. Provide male plug to supply 110VAC into the controller
11. Run/Stop button

C. Automatic Light and Fan shut down: The control system shall evaluate the system activity and automatically turn off the cab lighting and ventilation fan during periods of inactivity. The settings shall be field programmable.

D. Emergency Power Operation: Full automatic operation (Simplex 10-D4A) Upon loss of the normal power supply, building-supplied standby power is available to the elevator on the same wires as the normal power. Once the loss of normal power has been detected and standby power is available, the elevator is lowered to a pre-designated landing and will open the doors. After passengers have exited the elevator, the doors are closed. At this time the elevator is automatically allowed to continue service using the building-supplied standby power.

E. Special Operation: Not Applicable

2.10 HALL STATIONS

A. Hall Stations, General: Provide buttons with white-illuminating or blue-illuminating LED halos to indicate that a call has been registered at that floor for the indicated direction. Provide 1 set of pushbutton risers.
   1. Provide one pushbutton riser with faceplates having a No. 4 brushed stainless steel finish.
      a. Phase 1 firefighter's service key switch, with instructions, shall be incorporated into the hall station at the designated level.

B. Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements.

C. Hall Position Indicator: Not Applicable

D. Hall lanterns: Not Applicable

E. Special Equipment: Not Applicable

2.11 MISCELLANEOUS ELEVATOR COMPONENTS

A. Oil Hydraulic Silencer: Install multiple oil hydraulic silencers (muffler device) at the power unit location. The silencers shall contain pulsation absorbing material inserted in a blowout proof housing.

B. Lockable three phase circuit breaker with auxiliary contact with shunt trip capability to be provided. Circuit breaker to be located behind locked panel (Group 2 security access) at controller landing entrance jamb and should be sized according to the National Electrical Code.

C. Lockable single phase 110V circuit breaker for cab light and fan to be provided. Circuit breaker to be located behind locked panel (Group 2 security access) at controller landing entrance jamb should be sized according to the National Electrical Code

PART 3 EXECUTION

3.01 EXAMINATION

A. Before starting elevator installation, inspect hoistway, hoistway openings, pits and/or control room, as constructed, verify all critical dimensions, and examine supporting structures and all other conditions under which elevator work is to be installed. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.02 INSTALLATION

A. Install elevator systems components and coordinate installation of hoistway wall construction.
   1. Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1, manufacturer's installation instructions and approved shop drawings.
   2. Comply with the National Electrical Code for electrical work required during installation.

B. Perform work with competent, skilled workmen under the direct control and supervision of the elevator manufacturer's experienced foreman.

C. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports, and bracing including all setting templates and diagrams for placement.

D. Welded construction: Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualification of welding operators.

E. Coordination: Coordinate elevator work with the work of other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work.

F. Install machinery, guides, controls, car and all equipment and accessories to provide a quiet, smoothly operating installation, free from side sway, oscillation or vibration.

G. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum safe, workable dimensions at each landing.

H. Erect hoistway sills, headers, and frames before erection of rough walls and doors; erect fascia and toe guards after rough walls finished. Set sill units accurately aligned and slightly above finish floor at landings.

I. Lubricate operating parts of system, where recommended by manufacturer.

3.03 FIELD QUALITY CONTROL

A. Acceptance testing: Upon completion of the elevator installation and before permitting use of elevator, perform acceptance tests as required and recommended by Code and governing regulations or agencies. Perform other tests, if any, as required by governing regulations or agencies.

B. Advise Owner, Contractor, Architect, and governing authorities in advance of dates and times tests are to be performed on the elevator.

3.04 ADJUSTING

A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.

3.05 CLEANING

A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with manufacturer's recommendations for type of material and finish provided. Stainless steel shall be cleaned with soap and water and dried with a non-abrasive surface; it shall not be cleaned with bleach-based cleansers.

B. At completion of elevator work, remove tools, equipment, and surplus materials from site. Clean equipment rooms and hoistway. Remove trash and debris.
   1. Use environmentally preferable and low VOC emitting cleaners for each application type. Cleaners that contain solvents, pine and/or citrus oils are not permitted.

3.06 PROTECTION

A. At time of Substantial Completion of elevator work, or portion thereof, provide suitable protective coverings, barriers, devices, signs, or other such methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.

3.07 DEMONSTRATION

A. Instruct Owner's personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.

B. Make a final check of each elevator operation, with Owner's personnel present, immediately before date of substantial completion. Determine that control systems and operating devices are functioning properly.

3.08 ELEVATOR SCHEDULE

A. Elevator Qty. 1
   1. Elevator Model: enduraMRL Above-Ground (2-Stage)
   2. Elevator Type: Hydraulic Machine Room-Less, Passenger
   3. Rated Capacity: 2500 lbs.
   4. Rated Speed: 150 ft./min.
   5. Operation System: TAC32H
   6. Travel: 14'-0"
   7. Landings: 2 total
   8. Openings:
      a. Front: 2
      b. Rear: 0
   9. Clear Car Inside: 6' - 8" wide x 4' - 3" deep
   10. Cab Height: 8'-0" standard
   11. Hoistway Entrance Size: 3' - 6" wide x 7'-0" high
   12. Door Type: Center Opening
   13. Power Characteristics: 460 volts, 3 Phase, 60 Hz.
   14. Seismic Requirements: Zone 1
   15. Hoistway Dimensions: 8' - 4" wide x 5' - 9" deep
   16. Pit Depth: 4' - 0"
   17. Button & Fixture Style: Signa4 Signal Fixtures
   18. Special Operations: None

END OF SECTION 14 24 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

B. Section 23 21 13 - Hydronic Piping.

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:

Pipe Size	Insulation Thickness
Runouts (to 1")	1/2 inch
Up to 2"	1 1/2 inch
2 1/2" and over	2 inch

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 23 00 00
BASIC MECHANICAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Basic Mechanical Requirements specifically applicable to Division 23 00 00 Sections, in addition to Division 1 - General Requirements.

1.02 WORK SEQUENCE

A. Install work in phases to accommodate Owner's occupancy requirements during the construction period. Coordinate mechanical schedule and operations with Architect/Engineer.

1.03 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work as required.

C. Schedule of Alternates - see Division 1 Specifications.

1.04 SUBMITTALS

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.

B. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal.

C. Mark dimensions and values in units to match those specified.

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.

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.

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 EXECUTION

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. Equipment bases and supports.

C. Sleeves and seals.

D. 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 Resistive 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. Firestop openings in accordance with Specification Section 07 84 00.

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 AND DUCTWORK HANGERS AND SUPPORTS

A. Support horizontal piping as follows:

PIPE SIZE	MAX. HANGER SPACING	HANGER DIAMETER
1/2 to 1-1/4 inch	4'-0"	3/8"
1-1/2 to 2 inch	4'-0"	3/8"
2-1/2 to 3 inch	4'-0"	1/2"
4 inch	4'-0"	5/8"
6 inch	4'-0"	3/4"
PVC (All Sizes)	4'-0"	3/8"
C.I. Bell and Spigot (or No-Hub)	4'-0" and at joints	1/2"

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:

PIPE SIZE	MAX. TRANSVERSE SPACING	MAX. LONGITUDINAL SPACING
1 inch	14'-0"	28'-0"
1-1/4 inch	16'-0"	32'-0"
1-1/2 inch	18'-0"	36'-0"
2 inch	20'-0"	40'-0"
2-1/2 inch	22'-0"	44'-0"
3 inch	24'-0"	48'-0"
4 inch	28'-0"	56'-0"
6 inch	34-0"	68'-0"

K. Support all ductwork in accordance with SMACNA standards, latest edition(s).

L. All piping and ductwork shall be supported independently from the building structure. In no circumstance will supports and/or hangers be allowed to be attached from adjacent piping and/or ductwork.

3.03 EQUIPMENT BASES AND SUPPORTS

A. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.

B. Construct support of steel members. Brace and fasten with flanges bolted to structure.

C. Provide rigid anchors for pipes after vibration isolation components are installed.

D. Provide six inch high concrete pad for each boiler and water heater set on floor. Overall pad dimensions shall be equal to equipment dimensions plus six inches all around.

3.04 FLASHING

A. Provide flexible flashing and metal counterflashing where piping and ductwork penetrate 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.

E. Provide curbs for mechanical roof installations 14 inches minimum high above roofing surface. Flexible sheet flash and counterflash with sheet metal; seal watertight.

3.05 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. Refer to Specification Section 07 84 00 for approved firestopping materials and methods.

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 23 21 13
HYDRONIC PIPING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Pipe and pipe fittings.

B. Valves.

C. Heating water piping system.

1.02 REGULATORY REQUIREMENTS

A. Conform to ANSI/ASME B31.9.

1.03 QUALITY ASSURANCE

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Welding Materials and Procedures: Conform to ANSI/ASME SEC 9 and applicable state labor regulations.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Division 1 Specifications.

B. Store and protect products.

C. Deliver and store valves in shipping containers with labelling in place.

PART 2 PRODUCTS

2.01 HEATING WATER PIPING, ABOVE GROUND

A. Steel Pipe: ASTM A53 or A120, Schedule 40, 0.375 inch wall for sizes 12 inch and over, black.
   1. Fittings: ANSI/ASTM B16.3, malleable iron or ASTM A234, forged steel welding type fittings.
   2. Joints: Screwed, or ANSI/AWS D1.1, welded.

B. Copper Tubing: ASTM B88, Type L, hard drawn.
   1. Fittings: ANSI/ASME B16.23 cast brass of ANSI/ASME B16.29 solder wrought copper.
   2. Joints: ASTM B32, solder.

2.02 EQUIPMENT DRAINS AND OVERFLOWS

A. Steel Pipe: ASTM A53 or A120, Schedule 40 galvanized.
   1. Fittings: Galvanized cast iron, or ANSI/ASTM B16.3 malleable iron.
   2. Joints: Screwed, or grooved mechanical couplings.

B. Copper Tubing: ASTM B88, Type L, hard drawn.
   1. Fittings: ANSI/ASME B16.23 cast brass, or ANSI/ASME B16.29 solder wrought copper.
   2. Joints: ASTM B32, solder.

2.03 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size 2 Inches and Under: 150 psig malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.

B. Pipe Size Over 2 Inches: 150 psig forged steel slip-on flanges for ferrous piping; bronze flanges for copper piping; 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 elastomer composition sealing gasket for operating temperature range from -30 degrees F to 230 degrees F; steel bolts, nuts, and washers; galvanized couplings for galvanized pipe.

2.04 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.

2.05 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.

2.06 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.

2.07 BUTTERFLY VALVES

A. Iron body, bronze disc, resilient replaceable seat for service to 250 degrees F, wafer or lug ends, extended neck, infinite position lever handle with memory stop.

2.08 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.

2.09 SPRING LOADED CHECK VALVES

A. Iron body, bronze trim, stainless steel spring, renewable composition disc, screwed, wafer or flanged ends.

2.10 RELIEF VALVES

A. Bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labeled.

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.

D. After completion, fill, clean, and treat systems.

3.02 INSTALLATION

A. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient.

B. Install piping to conserve building space, and not interfere with use of space and other work.

C. Group piping whenever practical at common elevations.

D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

E. Provide clearance for installation of insulation, and access to valves and fittings.

F. Provide access where valves and fittings are not exposed.

G. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.

H. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

I. Prepare pipe, fittings, supports, and accessories for finish painting.

J. Install valves with stems upright or horizontal, not inverted.

K. Provide non-conducting dielectric connections wherever joining dissimilar metals.

L. Use lead-free solder for all copper piping joint connections, where required by authority having jurisdiction.

M. Do not "bullhead" any piping systems.

N. Install all piping at elevations indicated on Project Drawings. Where no elevations are indicated, install piping as high as possible.

3.03 APPLICATION

A. Install unions downstream of valves and at equipment or apparatus connections. Automatic control valves shall have unions installed at valve outlet and bypass (three-way control valves only).

B. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.

C. Install gate, ball or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.

D. Install ball or globe valves for throttling or bypass services. Refer to Section 15515 for balancing valves (and combination balancing and shutoff valves).

E. Provide spring loaded check valves on discharge of pumps.

F. Use butterfly valves in heating water systems interchangeably with gate and globe valves.

G. Provide 3/4 inch gate or ball drain valves at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.

END OF SECTION 23 21 13

SECTION 23 21 16
HYDRONIC SPECIALTIES

PART 1 GENERAL

1.01 WORK INCLUDED

A. Air vents.

B. Strainers.

C. Balancing valves.

1.02 RELATED WORK

A. Section 23 31 13 - Hydronic Piping.

1.03 REFERENCES

A. ANSI/ASME - Boilers and Pressure Vessels Code.

1.04 REGULATORY REQUIREMENTS

A. Conform to ANSI/ASME Boilers and Pressure Vessels Code Section 8D for manufacture of tanks.

1.05 QUALITY ASSURANCE

A. Manufacturer: For each product specified, provide components by same manufacturer throughout.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Division 1 Specifications.

B. Include installation instruction, assembly views, lubrication instructions, and replacement parts list.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site. Store and protect products.

PART 2 PRODUCTS

2.01 AIR VENTS

A. Manual Type: Short vertical sections of 2 inch diameter pipe to form air chamber, with 1/8 inch brass needle valve at top of chamber.

B. Float Type: Brass or semi-steel body, copper float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.

2.02 STRAINERS

A. Size 2 inch and Under: Screwed brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.

B. Size 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.

C. Size 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

2.03 AUTOMATIC BALANCING/FLOW CONTROL VALVES

A. Construction: Brass or bronze body, construction to allow valve to function as both a balancing valve and shut-off (service duty) valve, with pipe threads or sweat connections as required, with test connections, 100% shutoff capability.

B. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of ten times the minimum pressure required for control.

A. The flow cartridge's non-clogging single orifice design shall include no metal-to-metal contact, no segmented ports, no rolling diaphragm, and incorporate a tapered profile flow nozzle and metering disk controlled by a pressure compensating spring.

B. The flow cartridge shall be a single assembly, constructed with stainless steel moving parts and be accessible without removing the valve from the piping. Flow cartridges constructed with composite or rubber materials are not acceptable.

C. The flow cartridge shall be factory flow tested and calibrated to maintain accuracy of ±5%; the accuracy shall be maintained over a standard operating range of 2 – 45 PSID. Cartridges that prevent flow above the maximum operating range are not acceptable.

D. The flow cartridge shall be clearly inscribed with the designed manufactured flow rate. Cartridges that are not marked with the manufacture designed flow rate or use a coding system are not acceptable.

E. Manufacturer shall provide a full 100% cartridge exchange for up to one (1) year from date of delivery at no charge. Exchange shall be provided for flow rate changes within same valve body.

F. The flow cartridge and valve shall carry a lifetime product warranty.

G. Valves 1½" and smaller shall be a forged brass Y-pattern body and valves 2" – 2½" shall be a cast brass y-pattern body with integrated ball valve, (2) pressure/temperature test ports, a tag indicating the model, flow rate and PSID range, blowout proof stem with dual FKM o-ring seals, interchangeable union end with FKM o-ring seal, hard chrome plated solid ball with Teflon™ seats, and rated at 600 PSI WOG, 325 degrees F. Valves shall be available with NPT, SWT, PRESS or PUSH connections; like Nexus UltraMatic™ (Model UM.) Optional solid stainless steel ball and stainless steel valve stem shall be available.

H. Valves 2½" and larger shall be a wafer style cast iron body with pressure and temperature test plugs across the flow cartridge; a tag indicating the model, flow rate and operating control range; able to incorporate a drain and or vent as required and rated at 400 PSI, 350 degrees F.; like Nexus UltraMatic™ (Model UMW.) To minimize field labor, valve may include Flange x Groove adapters or Flange x Threaded adapters, butterfly valves and other accessories pre-assembled; like Nexus UltraMatic™ (Model UMG, UMGB, UMWB, UMT, and UMTB.)

I. Optional extended pressure and temperature test plugs, manual air vents and handles shall be available. Extended handles shall not break the vapor barrier when operated.

J. Contractor should, to reduce field connections and leak points, provide pre-assembled kit including isolation valves, strainers, unions and other required accessories.

K. Approved Manufacturers:
   1) Nexus Valve, Inc.
   2) Flow Design, Inc.
   3) Flo-Pac LLC
   4) Other proposed alternate manufacturers as approved by Architect/Engineer

PART 3 EXECUTION

3.01 INSTALLATION AND APPLICATION

A. Install specialties in accordance with manufacturer's instructions to permit intended performance.

B. Support tanks inside building from building structure, in accordance with manufacturer's instructions.

C. Where large air quantities can accumulate, provide enlarged air collection standpipes.

D. Provide manual air vents at system high points and as indicated.

E. For automatic air vents in ceiling spaces or other concealed locations, provide vent tubing to nearest drain.

F. Provide isolation valves on water inlet to terminal heating units such as radiation, unit heaters, and fan coil units.

G. Provide balancing valves on water outlet side of terminal units, coils, etc. or as indicated on the Drawings.

H. Provide relief valves on pressure tanks, low pressure side of reducing valves, heat exchangers, and expansion tanks.

I. Select system relief valve capacity so that it is greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment.

J. Pipe relief valve outlet to nearest floor drain.

END OF SECTION 23 21 16

SECTION 23 82 00
TERMINAL HEAT TRANSFER UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Baseboard/fin-tube radiation.

1.02 RELATED SECTIONS

A. Section 23 21 13 - Hydronic Piping.

B. Section 23 21 14 - Hydronic Specialties.

1.03 PROJECT RECORD DOCUMENTS

A. Submit record documents under provisions of Division 1 Specifications.

B. Accurately record actual locations of access doors in radiation cabinets required for access or valving.

1.04 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Division 1 Specifications.

B. Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listings.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years experience.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable code for internal wiring of factory wired equipment.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site.

B. Store and protect products.

C. Protect units from physical damage by storing in protected areas and leaving factory covers in place.

1.08 SEQUENCING AND SCHEDULING

A. Sequence work under the provisions of Division 1 Specifications.

B. Install radiation, convectors, fan-coil units, unit ventilators and radiant heaters (equipment exposed to finished areas) after walls and ceiling are finished and painted. Avoid damage.

1.09 WARRANTY

A. Provide one year manufacturer's warranty under provisions of Division 1 Specifications.

B. Warranty: Include coverage of motors.

PART 2 PRODUCTS

2.01 BASEBOARD/FIN-TUBE RADIATION

A. Heating Elements: 3/4 ID seamless copper tubing, mechanically expanded into evenly spaced aluminum fins, suitable for soldered fittings.

B. Element Hangers: Quiet operating, ball bearing cradle type providing unrestricted longitudinal movement, on enclosure brackets.

C. Enclosures: 18 gage steel up to 18 inches in height, 16 gage steel over 18 inches in height. Provide easily jointed components for wall to wall installation. Support rigidly, on wall or floor mounted brackets.

D. Finish: Factory applied baked enamel of color as selected on visible surfaces of enclosure or cabinet.

E. Damper: Where not thermostatically controlled, provide knob-operated internal damper at enclosure air outlet.

F. Access Doors: For otherwise inaccessible valves, provide factory-made permanently hinged access doors, 6 x 7 inch minimum size, integral with cabinet.

G. Capacity: Based on 65 degree F entering air temperature, 180 degree F average water temperature.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work and opening dimensions are as indicated on shop drawings.

B. Verify that required utilities are available, in proper location, and ready for use.

C. Beginning of installation means installer accepts existing surfaces.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Locate finned tube radiation on outside walls and run cover wall-to-wall unless otherwise indicated. Center elements under windows. Where multiple windows occur over units, divide element into equal segments centered under each window. Align cabinet joints with window mullions. Install wall angles where units butt against walls.

C. Locate unit ventilators as indicated, level and shim units, and anchor to structure. Coordinate exact location of wall louvers. Install shelving and auxiliary cabinetry. Provide wall trim pieces for continuous wall-to-wall installation.

D. Protect units with protective covers during balance of construction.

E. Provide hydronic units with shut-off valve on supply and automatic balancing and shutoff valve on return piping. If not easily accessible, extend vent to exterior surface of cabinet for easy servicing. For cabinet unit heaters and unit heaters, provide float operated automatic air vents with stop valve.

F. Seal all piping penetrations through unit ventilator cabinets at floor/unit base with silicone sealant, so that openings are watertight.

3.03 CLEANING

A. Clean work under provisions of Division 1 Specifications.

B. After construction is completed, including painting, clean exposed surfaces of units. Vacuum clean coils and inside of cabinets.

C. Touch-up marred or scratched surfaces of factory-finished cabinets, using finish materials furnished by manufacturer.

D. Install new filters.

END OF SECTION 23 82 00

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. Service entrance and distribution.
B. Panelboards including feeders.
C. Lighting, including fixtures and lamps.
D. Building power.
E. Equipment connections.
F. Emergency lighting, wiring, accessories and controls.
G. Telephone wiring, raceways and sleeves.
H. Computer system raceways and sleeves.
I. Fire alarm system.
J. Removal of existing electrical wiring, equipment and devices.
K. Miscellaneous outlets and wiring.
L. Occupancy Sensors

All items of equipment are specified in the singular, however, the Contractor shall provide and install the number 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, contact the Engineer to arrange for a demonstration that circuit breakers are properly scheduled, 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 Warrantees 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 Contractors 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 standard 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 work required by other Divisions of the specifications, by the Electrical Contractor (this Contractor).

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 breaker 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). <u>OR</u> 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 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 <u>unfinished areas</u>, 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 "SPLICE 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 - Liquidtite 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 suppresser 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.

Other 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 manufacturers 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.

Specific NFPA and UL Standards: The system shall comply with the applicable provisions of the following current National Fire Protection Association (NFPA) standards: latest published edition of NFPA 72; NFPA 90A; latest published edition of the Life Safety Code NFPA-101, and other associated standards.

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 pigtails, 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 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. PLASTIC 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, condulet 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 Contractors 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 Liquidtite 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