CHURCHWOODS

4130 OLD POST ROAD
CHARLESTOWN, RHODE ISLAND

PROJECT MANUAL INCLUDING SPECIFICATIONS
100% CONSTRUCTION DOCUMENTS

MAY 27, 2016

Owners/Developers:
ChurchWoods, LLC
c/o Washington County Community Development Corp.
400 Tower Hill Road
North Kingstown, RI 02852

Architect:
Union Studio Architecture and Community Design, Inc.
140 Union Street
Providence, RI 02903
401.272.4724

Mechanical, Electrical, Plumbing Engineer:
Engineering Design Services, Inc.
141 Industrial Drive
Slatersville, RI 02876
401.765.7659

Landscape Architect:
Birchwood Design Group
46 Dike Street
Providence, RI 02909
401.383.4950

Structural Engineer:
Yoder + Tidwell, Inc.
333 Smith Street
Portsmouth, RI 02908
401.751.2460

Civil Engineer:
Dowdell Engineering, Inc.
P.O. Box 1684
3949 Old Post Road
Charlestown, RI 02813
401.634.1027

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BID FORM

Bid To: Mr. Gerard N. Bertrand
ChurchWoods, LLC
c/o Washington County Community Development Corp.
400 Tower Hill Road
North Kingstown, RI 02852
Tel: 401-667-7185

Project: ChurchWoods
4130 Old Post Road
Charlestown, RI 02813

Bidder: _____
Legal name of entity

_____
Address

_____
Contact name | Contact email

_____
Contact telephone | Contact fax

BASE BID PRICE

The Bidder submits this bid proposal to perform all of the work (including labor and materials) as described in the solicitation for this Base Bid Price, (including the costs for all Allowances, Bonds, and Addenda):

$ _____

(Base Bid Price *in figures* printed electronically, typed, or handwritten legibly in ink)

_____

(Base Bid Price *in words* electronically, typed, or handwritten legibly in ink)

The Base Bid Price ***includes*** the costs for the following Allowances:

ALLOWANCE NO. 1 **-** CONSTRUCTION SIGN

$ 750

ALLOWANCE NO. 2 – PROJECT IDENTITY SIGN

$ 5,000

ALLOWANCE NO. 3 – PH TREATMENT

$_____ _____

BONDS

The Base Bid Price ***includes*** the costs for all Bid and Payment and Performance Bonds required by the solicitation.

Bidder to include and comply with RI Department of Transportation 'Rules and Regulations Concerning Permission for Use of State Highway Rights-of-Way' and bonding requirements for full value of all work within the State right-of-way along Old Post Road and any work that is not within the State right-of-way that may affect the State. The estimate of the cost of work to include materials, labor, traffic control and associated work items.

ADDENDA

The Bidder has examined the entire solicitation (including the following Addenda), and the Base Bid Price ***includes*** the costs of any modifications required by the Addenda.

All Addenda must be acknowledged.

Addendum No. 1, dated _____

Addendum No. 2, dated _____

Addendum No. 3, dated _____

Addendum No. 5, dated _____

Addendum No. 6, dated _____

Addendum No. 7, dated _____

ALTERNATES *(Additions to Base Bide Price)*

The Bidder offers to: (i) perform the work described in these Alternates as selected by the Owner, based on the availability of funds and the best interest of the Owner; and (ii) increase the Base Bid Price by the amount set forth below for each Alternate selected.

BID ALTERNATE #1

Description: Provide and install (24) twenty-four (one in each kitchen of dwelling unit) Danby 18" Built-in dishwasher, Model # DDW1809W-1, Energy Star Qualified, 8 place setting, silverware basket, in lieu of removable base cabinet. Provide all required plumbing (supply and drainage) and electricity required for the installation of the dishwashers.

adda Add/ (Deduct)

$ _____

(Amount *in figures* printed electronically, typed, or handwritten legibly in ink)

_____

(Amount *in words* electronically, typed, or handwritten legibly in ink)

BID ALTERNATE #2

Description: Eliminate the construction of the Building C, Community Building and all scope pertaining to its construction (sewer pipe, landscaping, grading, power, etc.). Site power/electrical panel to be relocated to the Well House. Size of OWTS "E" can not be reduced.

adda Add/ (Deduct)

$ _____

(Amount *in figures* printed electronically, typed, or handwritten legibly in ink)

_____

(Amount *in words* electronically, typed, or handwritten legibly in ink)

BID ALTERNATE #3

Description: Provide and install 42" wide compacted bluestone dust pathways with well graded compacted aggregate stone base, as indicated with dashed lines on Site Improvement Plan.

adda Add/ (Deduct)

$ _____

(Amount *in figures* printed electronically, typed, or handwritten legibly in ink)

_____

(Amount *in words* electronically, typed, or handwritten legibly in ink)

BID DEDUCT ALTERNATE #4

Description: Provide and install 4" thick asphalt walkways on prepared grade in lieu of specified concrete sidewalks shown on Site Improvement Plan.

adda Add/ (Deduct)

$ _____

(Amount *in figures* printed electronically, typed, or handwritten legibly in ink)

_____

(Amount *in words* electronically, typed, or handwritten legibly in ink)

BID DEDUCT ALTERNATE #5

Description: Electrical contractor shall provide a 40KW Generator to feed all heating units as well as all pumps associated with water distribution. Electrical contractor shall provide a 100A automatic transfer switch and all associated wiring from generator to transfer switch, and transfer switch to panel "WP". Verify generator location with Owner, and verify all generator requirements with generator representative.

adda Add/ (Deduct)

$ _____

(Amount *in figures* printed electronically, typed, or handwritten legibly in ink)

_____

(Amount *in words* electronically, typed, or handwritten legibly in ink)

UNIT PRICES

The Bidder submits these predetermined Unit Prices as the Basis for any change orders approved in advance by the State. These Unit Prices include ***all*** costs, including labor, materials, services, regulatory compliance, overhead, and profit.

	DESCRIPTION OF SERVICES	CONTRACTORS UNIT COST
Unit Price No.1	Removal of boulders over one cubic yard.	
	Unit cost is per cubic yard.	$, .

CONTRACT TIME

The Bidder offers to perform the work in accordance with the timeline specified below:

- Estimated Start of Construction..... August 1, 2016
- Substantial Completion ..... September 1, 2017
- Final Completion / All funds released ..... September 15, 2017

Timeline may be subject to change at the discretion of the Owner.

LIQUIDATED DAMAGES

The successful bidder awarded a contract pursuant to this solicitation shall be liable for and pay the Owner as liquidated damages and not as a penalty, the following amount for ***each*** calendar day of delay beyond the date for substantial completion, as determined in the sole discretion of the Town: **One Thousand Dollars ($1,000.00) per day**.

BID FORM SIGNATURE(S)

This bid proposal is irrevocable for 60 days from the bid proposal submission deadline.

If the Bidder is determined to be the successful bidder pursuant to this solicitation, the bidder will promptly: (i) comply with each of the requirements of the Tentative Letter of Award; and (ii) commence and diligently pursue the work upon execution of final Contract by both parties.

The person signing below certifies that he or she has been duly authorized to execute and submit this bid proposal on behalf of the Bidder.

Date: _____

BIDDER _____

_____
Name of Bidder

_____
Signature in ink

_____
Printed name and title of person signing on behalf of Bidder

_____
Bidder's Contractor Registration Number

END OF BID FORM

DRAFT

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 the « » day of « » in the year « »
(In words, indicate day, month and year.)

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

ChurchWoods, LLC
c/o Washington County Community Development Corp.
400 Tower Hill Road
North Kingstown, RI 02852 »

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

«To Be Determined »« »
« »
« »
«

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

Church Woods, 4130 Old Post Road, Charlestown, RI
New wood frame, slab on grade construction of twenty-four (24) one-bedroom dwelling units in seven (7) buildings, one community building and one well house. Project includes demolition of an existing building and parking area. Site improvements include, but not limited to new drive lane, parking, storm water management systems, new septic, new well, site lighting, site power, and new landscaping.

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

Union Studio Architecture and Community Design, Sub Chapter S Corp.
140 Union Street
Providence, RI 02903

The Owner and Contractor agree as follows.

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

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

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.

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ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.
(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

« »

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

« »

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

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than « » (« ») 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.)

« **All funds must be drawn down upon and spent by September 30, 2017** »

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Portion of Work	Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.
(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early 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 « » ($ « »), 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. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

« »

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

Item	Units and Limitations	Price Per Unit ($0.00)

§ 4.4 Allowances included in the Contract Sum, if any:
(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price

ARTICLE 5 PAYMENTS
§ 5.1 PROGRESS PAYMENTS
§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

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

« See Exhibit 5.1.2»

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the fifth» day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the «fifth » day of the « following » month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than « thirty » (« 30 ») days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

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

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User Notes: (1986423879)

§ 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 « ten » percent (« 10 » %). 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 «ten » percent (« 10 » %);

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

.4 Subtract amounts, if any, for which the Architect 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 Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
(Section 9.8.5 of AIA Document A201–2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)

.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 Reduction or limitation of retainage, if any, shall be as follows:
(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

« See Exhibit 5.1.6.1 »

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

§ 5.2 FINAL PAYMENT

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

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

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

« »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

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User Notes: (1986423879)

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

« »
« »
« »
« »

§ 6.2 BINDING DISPUTE RESOLUTION
For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007, the method of binding dispute resolution shall be as follows:
(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

[« »] Arbitration pursuant to Section 15.4 of AIA Document A201–2007

[« »] Litigation in a court of competent jurisdiction

[« X »] Other *(Specify) First mediation, then arbitration.*

« »

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.

§ 7.2 The Work may be suspended by the Owner as provided in 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 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

« per annum » % « »

§ 8.3 The Owner's representative:
(Name, address and other information)

«Mr. Gerard Bertrand »
«400 Tower Hill Road
North Kingstown, RI 02852 »
« »
« »
« »
« »

§ 8.4 The Contractor's representative:
(Name, address and other information)

«To be Determined »
« »
« »

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« »

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

§ 8.6 Other provisions:

« »

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	Title	Date	Pages

§ 9.1.4 The Specifications:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)
« »

Section	Title	Date	Pages

§ 9.1.5 The Drawings:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)
« »

Number	Title	Date

§ 9.1.6 The Addenda, if any:

Number	Date	Pages

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

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

.1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

« »

.2 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid,

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Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

« »

ARTICLE 10 INSURANCE AND BONDS

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

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

Type of insurance or bond	Limit of liability or bond amount ($0.00)
Owner's Builder's Risk insurance naming general contractor and State of Rhode Island, Office of Housing and Community Development as additionally insured	full amount of the contract amount
Contractor's Certificate of Liability Insurance	$1,000,000.00
Contractor's Performance Bond	full amount of the contract amount
Physical Alteration Permit Bond, Rhode Island Department of Transportation	full amount of the value of the work in the State Right-of-Way

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

OWNER *(Signature)*	CONTRACTOR *(Signature)*
« Gerard Bertrand ChurchWoods, LLC »« »	« »« »
(Printed name and title)	*(Printed name and title)*

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EXHIBIT 5.1.2

CHURCHWOODS
4130 OLD POST ROAD
CHARLESTOWN, RI

The Contractor shall submit a draft application for payment ("pencil req") to the Architect for review three workdays prior to the scheduled requisition meeting. The Architect shall forward a copy of the draft requisition, with his/her recommendations, approvals, or disapprovals to the Owner for review.

A requisition meeting shall be held on or as close as possible to, the 5th of the month, with the Contractor, Architect, and Owner present to review and discuss the application for payment.

The Contractor shall modify the application for payment, as may be required by the Architect.

The Owner shall make payment to the Contractor not later than 30 days after the Application for Payment is received by the Architect as specified in Article 5 of this contract.

The Architect shall, in accordance with the contract documents, approve, or disapprove, the application for payment no later than 3 calendar days after receipt of the actual, agreed upon application for payment. The Architect shall forward this document to the Owner for approval and the Owner shall forward the approved document to the lending institution for its approval and payment. Copies of the approved documents shall be provided to all parties

Lien waivers, updated schedules, updated subcontractors lists, and minority reporting documents are required to be submitted by the Contractor to the Owner, prior to issuance of each payment.

The Contractor must submit Certified Payroll Reports, on the Federal U. S. Department of Labor forms, weekly for his firm and any and all subcontractors on the project. A report is required weekly even if there is no work by an ongoing subcontractor or the General Contractor. The report in this instance would state “No Work.”

EXHIBIT 5.1.6.1

CHURCHWOODS
4130 OLD POST ROAD
CHARLESTOWN, RI

A ten percent (10%) retainage shall be held on all payments until such time as fifty percent (50%) completion of work, as determined by the Architect.

The retainage may be reduced to five percent (5%) upon fifty percent (50%) completion with the consent and approval of the Owner.

The retainage shall be further reduced upon the issuance of the Certificate of Substantial Completion by the Architect, as well as the consent and approval of the Owner. The value of the retainage shall equal the established amount of the value of the outstanding/remaining work described in the so-called ‘Punch List’ of the Certificate of Substantial Completion plus a 1.5 multiplier of the established Punch List value.

The reduced retainage shall be held until all requirements for the completion of the so-called "Punch List", the correction of all non-conforming work and close out of the project are fulfilled by the Contractor. Final Payment shall not be advanced to the Contractor until the Contractor has fulfilled all obligations set-forth in the contract documents.

DRAFT

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)
ChurchWoods
4130 Old Post Road
Charlestown, RI

THE OWNER:
(Name, legal status and address)
ChurchWoods, LLC
c/o Washington County Community Development Corp.
400 Tower Hill Road
North Kingstown, RI 02852 »

THE ARCHITECT:
(Name, legal status and address)
Union Studio Architecture and Community Design, Sub Chapter S Corp.
140 Union Street
Providence, RI 02903
« »

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

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

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

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

§ 1.1.3 THE WORK

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

§ 1.1.4 THE PROJECT

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

§ 1.1.5 THE DRAWINGS

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

§ 1.1.6 THE SPECIFICATIONS

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

§ 1.1.7 INSTRUMENTS OF SERVICE

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

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 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 necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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

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

§ 1.3 CAPITALIZATION

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

§ 1.4 INTERPRETATION

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

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

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. 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 Architect's or Architect'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, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

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

ARTICLE 2 OWNER

§ 2.1 GENERAL

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

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

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

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

§ 2.2.4 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 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 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 Architect'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 Architect. 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 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 Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

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

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§ 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 Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

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

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

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, 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 Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. 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.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect 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 Architect and in accordance with a Change Order or Construction Change Directive.

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

§ 3.6 TAXES

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

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

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

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect'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 Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 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,

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but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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

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

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

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

§ 3.9 SUPERINTENDENT

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

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

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect'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 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.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect'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 Architect 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 Architect.

§ 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 Architect and shall be delivered to the Architect 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 Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

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

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

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

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

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

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

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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 Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect 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.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and 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 Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for 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 Architect. 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 Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce

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other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

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

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

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

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

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

§ 4.2 ADMINISTRATION OF THE CONTRACT

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

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

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and 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 Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS 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 Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. 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 Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the

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Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

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

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

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

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

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

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

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

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

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§ 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 Architect 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 Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

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

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

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

§ 5.3 SUBCONTRACTUAL RELATIONS

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

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

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

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to 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.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

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§ 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. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 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 Architect 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.

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§ 6.3 OWNER'S RIGHT TO CLEAN UP

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

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

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

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

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

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

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

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

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

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

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 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 Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 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.

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§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect 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 Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

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

.2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 Additional costs of supervision and field office personnel directly attributable to the change.

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

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

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

§ 7.4 MINOR CHANGES IN THE WORK

The Architect 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 Architect 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 in the Agreement.

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

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

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

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

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furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

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

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, 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; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

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

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, 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 Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect 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 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

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

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

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

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Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect'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 Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect'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 Architect. 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 Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and 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.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

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

.1 defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a separate contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

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

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or 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 Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

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

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

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

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and 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. Neither the Owner nor Architect 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 Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

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

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

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

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§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, 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 Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

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

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

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with 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 Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect 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.

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§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed 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 Architect 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; or
.3 terms of special warranties required by the Contract Documents.

§ 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.

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
.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.

§ 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 Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

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

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

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

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

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

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

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

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

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

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

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

§ 11.1.2 The insurance required by Section 11.1.1 shall 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 acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

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

§ 11.2 OWNER'S LIABILITY INSURANCE
The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE
§ 11.3.1 Unless otherwise provided, the Owner 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

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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 Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 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 Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 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 Owner and 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 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 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.

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§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor 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 Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, 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 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 the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. 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 Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner 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 Owner 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 Owner'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 Owner 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 Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

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

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§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, 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 Architect 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 Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of 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 Architect, the Owner may correct it in accordance with Section 2.4.

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

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

§ 12.2.3 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.

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ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make 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 a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate 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.

§ 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, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach 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 Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (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 Architect, 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 Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, 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 Architect'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 Architect.

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

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

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 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;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, 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, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 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 Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

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.4 otherwise is guilty of substantial breach of 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.

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

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

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

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

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

§ 14.4.2 Upon receipt of 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, along with reasonable overhead and profit on the Work not executed.

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.

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§ 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 Architect, if the Architect is not serving as the Initial Decision Maker. 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 Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

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

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

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

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES
The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

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

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 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, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim 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. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

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

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§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of 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 Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

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

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

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

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 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, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

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

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The

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party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 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).

§ 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.

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SECTION 00050**0** - SUPPLEMENTARY CONDITIONS

The following supplements modify the "General Conditions of the Contract for Construction", AIA Document A201, 2007 Edition. Where a portion of the General Conditions is modified by these Supplementary Conditions, the unaltered portions or the General Conditions shall remain in effect.

ADDITIONAL CONDITIONS

Additional conditions required for the work of this project are included in that portion of this Project Manual directly following these Supplementary Conditions; and with their inclusion become part of the Contract for this work.

ARTICLE 1: GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

A. Wherever in any of these Contract documents the following terms are used, the intent and meaning shall be as follows:

1. Owner: ChurchWoods, LLC
c/o Washington County Community Development Corp.
400 Tower Hill Road
North Kingstown, RI 02852
Tel: 401.667.7185

2. Architect: Union Studio Architecture & Community Design
140 Union Street
Providence, RI 02903
Tel: 401.272.4724
Fax: 401.272.4825

Reference to Division 1:

Where provisions of General Conditions related to Project administrative or work-related requirements of the contract, those paragraphs are expanded and are specified in Division 1 "General Requirements" of the Specifications.

ARTICLE 2: OWNER

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.3 Delete: "and a legal description of the site."

ARTICLE 3: CONTRACTOR

3.4 LABOR AND MATERIALS

Add the following subparagraphs:

3.4.1.1

The Contractor shall be responsible for payment of all utility costs during construction, including water, gas, oil and electricity. The Contractor shall be responsible for any utility company charges, and connection fees for the work.

3.4.2.1

After the Contract has been executed, the Owner and Architect will consider a formal request for the submission of products in place of those specified, only under the conditions set forth in the Basic Requirements (Division 1 of the Specifications).

3.4.2.2

By making requests for substitutions based on Sub-paragraph 3.4.2.1 above, the contractor:

1. represents that the contractor has personally investigated the proposed substitute product and has determined that it is equal or superior in all respects to that specified;
2. represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;
3. certifies that the cost data presented is complete and includes all related costs under this Contract, except the Architect' redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and
4. will coordinate the installation of the accepted substitute, making such changes as may be required for the work to be complete in all respects.

3.8.2.3

Add the following to the end of Clause 3.8.2.3:

except when installation is specified as part of the allowance in the Basic Requirements (Division 1 of the Specifications).

ARTICLE 4: ARCHITECT

4.1. GENERAL

Add the following subparagraphs:

4.1.4 The Architect represents to the Owner that the Architect's services shall be performed in accordance with those usual and customary standards of professional care, skill and diligence which are at the time of performance of services under this Agreement commonly followed by architects performing the same or similar services in the locale in which the Architect's office is located.

4.1.5 The foregoing representation shall not apply in connection with, and the Architect shall have no responsibility for any consequences resulting from (1) the Owner's failure to perform a responsibility under this Agreement or (2) any of the following circumstances:

1. The discovery, identification, presence, handling, disposal or removal of, or exposure of any person to hazardous materials pre-existing in any form at the Project site, including but not limited to, asbestos and asbestos products. Article 9.8 is hereby modified to delete the words, "Unless otherwise provided in this Agreement";

2. Any modification to or use of any drawings, specifications or other documents furnished by the Architect, which modification or use is not contemplated by this Agreement or approved in writing by the Architect;

4.2.14 The Architect's obligation to observe the Work shall not create any duty on the part of the Architect to the Owner, Contractor, subcontractors, employees of any of them, or any third party with regard to job site safety temporary bracing, shoring, scaffolding, or partially completed construction. Responsibility for safety and for construction means, methods, techniques, sequences and procedures in all such areas shall remain solely with the Contractor.

ARTICLE 5: SUBCONTRACTORS

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

Add the following subparagraph:

5.2.1.1

Not later than 15 days after the date of commencement, the Contractor shall furnish in writing to the Owner, through the Architect, the names of persons or entities proposed as subcontractors with subcontracts exceeding $4999.00 in value.

ARTICLE 7: CHANGES IN THE WORK

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.6 In the first sentence, delete the words "a reasonable allowance for overhead and profit" and substitute "an allowance for overhead and profit in accordance with Clause 7.3.10.1 through 7.3.10.6 below:

Add the following Subparagraph:

7.3.10 In Subparagraph 7.3.6 the allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:

1. For the Contractor, for Work performed by the Contractor's own forces, 12 percent of the cost.

2. For the Contractor, for Work performed by the Contractor's Subcontractor, 8 percent of the amount due the Subcontractor.

3. For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 12 percent of the cost.

4. Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.6.

5. In order to facilitate the checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs, including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are

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

ARTICLE 8: TIME

8.1 DEFINITIONS

Delete Subparagraph 8.1.4 and substitute the following:

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day, excluding weekends and legal holidays, unless otherwise noted.

ARTICLE 9: PAYMENTS AND COMPLETION

9.3 APPLICATIONS FOR PAYMENT

9.3.1 Delete the entire first sentence. Substitute:

On the calendar day established for the project meetings on or closest to the first day of the month, the contractor shall provide a draft requisition request completed in accordance with the contract schedule of values for review and approval by the Owner, Architect and the Owner's financial institutions. The Contractor shall issue the actual Requisition Request per any revisions requested by said review and approval entities.

Add the following sentence to Subparagraph 9.3.1:

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

9.6.3 Delete Article 9.6.3 and reference to Article 9.6.3 in Article 9.6.5. Architect shall have no obligation to furnish information to Subcontractors.

9.8.5 Add the following sentence:

The payment shall be sufficient to increase the total payments to 100 percent of the contract sum, less such amounts the Architect shall determine for incomplete work and unsettled claims and only with the approval of the Owner.

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.2 SAFETY OF PERSONS AND PROPERTY

Add the following clause:

10.2.4.1
When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary, the Contractor shall give the Owner reasonable advance notice.

ARTICLE 11: INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

Add the following clauses:

11.1.1.9

Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:

1. Premises Operations (including X, C and U as applicable).
2. Independent Contractors' Protective.
3. Products and Completed Operations.
4. Personal Injury Liability with Employment Exclusion deleted.
5. Contractual including specified provision for Contractor's obligation under paragraph 3.18.
6. Owner, non-owed and hired motor vehicles.
7. Broad Form Property Damage including Completed Operations.
8. Owner's Protective.

11.1.1.9.1

If the General Liability coverage's are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverage's required to be maintained after final payment, certified in accordance with Subparagraph 9.10.2. Bond shall be required prior to Owner's finance closing.

Add the following clause to 11.1.2:

11.1.2.1

The insurance required by Subparagraph 11.1.1 shall be written for not less than the following:

1. Workers Compensation:

   a. State-Statutory
   b. Federal-Statutory
   c. Employer's Liability - $500,000

2. Comprehensive General Liability (including Premises-Operations; Contractors' Protective; Products and Completed operations; Broad Form Property Damage):

   a. Bodily Injury:
      $1,000,000 Each Occurrence
      $1,000,000 Annual Aggregate

   b. Property Damage
      $1,000,000 Each Occurrence
      $1,000,000 Annual Aggregate
   c. Products and Completed Operations to be maintained for one (1) year after final payment.
   d. Property Liability Insurance shall coverage for the following hazards: X, C and U.

3. Contractual Liability (Hold Harmless Coverage):

a. Bodily Injury:
$1,000,000 Each Occurrence
b. Property Damage:
$1,000,000 Each Occurrence
$1,000,000 Annual Aggregate

4. Personal Injury, with Employment Exclusion deleted:

a. $1,000,000 Annual Aggregate

E. Comprehensive Automobile Liability:

a. Bodily Injury:
$1,000,000 Each Occurrence
b. Property Damage:
$1,000,000 Each Occurrence

11.1.3

Add the following sentence to Subparagraph 11.1.3:

If this insurance is written on the Comprehensive General Liability policy form, the Certificates shall be AIA Document G705, Certificate of Insurance. If this insurance is written on a commercial General Liability policy form, ACORD Form 25S will be accepted.

11.2 OWNER'S LIABILITY INSURANCE

Delete Subparagraph 11.2.1 and substitute the following:

The Contractor shall purchase and maintain insurance covering the Owner's contingent liability for claims which may arise from operations under the contract in amounts equal to the Contractor's Liability Insurance.

11.3.1

Modify the first sentence of Subparagraph 11.3.1 as follows:

Delete "Unless otherwise provided, the Owner" and substitute "the Contractor."

Add the following sentences:

The form of policy for this coverage shall be Completed Value. If the Owner is damaged by the failure of the Contractor to maintain such insurance, then the Contractor shall bear all reasonable costs properly attributable thereto.

11.3.1.2

Delete Clause 11.3.1.2.

11.3.1.3

Delete Clause 11.3.1.3.

11.3.1.4

Delete Subparagraph 11.3.1.4

Add the following Clause:

11.3.1.6

The insurance required by Paragraph 11.3 is not intended to cover machinery, tools or equipment owned or rented by the Contractor which are utilized in the performance of the work but not incorporated into the permanent improvements. The Contractor shall at the Contractor's own expense, provide insurance coverage for owned or rented machinery, tools or equipment which shall be subject to the provisions of Subparagraph 11.3.7.

11.3.6

Delete Subparagraph 11.3.6 and substitute the following:

Before any exposure to loss may occur, the Contractor shall file with the Owner two certified copies of the policy or policies providing this Property Insurance coverage, each containing those endorsements specifically related to the Project. Each policy shall contain a provision that the policy will not be cancelled or allowed to expire at least 30 days' prior written notice has been given to the Contractor.

11.3.7

Modify Subparagraph 11.3.7 by substituting "Contractor" for "Owner" at the end of the first sentence.

11.3.8

Modify Subparagraph 11.3.8 by substituting "Contractor" for "Owner" as fiduciary; except that at the first reference to "Owner" in the first sentence, the word "this" should be substituted for "Owner's."

11.3.9

Modify Subparagraph 11.3.9 by Substituting "Contractor" for "Owner" each time the later word appears.

11.3.10

Modify Subparagraph 11.3.10 by substituting "Contractor" for Owner" each time the later word appears.

11.4 PERFORMANCE BOND AND PAYMENT BOND

Delete Subparagraph 11.4.1 and substitute the following:

11.4.1

The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum.

11.4.1.1

The Contractor shall deliver the required bonds to the Owner not later than three days following the date of the Agreement entered into, or if the Work is to be commenced prior thereto in

response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

11.4.1.2
The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.4 RIGHTS AND REMEDIES

Add the following subparagraph:

13.4.3
The services to be performed by the Architect pursuant to the Architect's agreement with the Owner are intended solely for the Owner, and o benefit is conferred thereby upon any person or entity not a party to that agreement. No such person or entity shall be entitled to rely on the Architect's performance of its services thereunder, and no right to assert claim against the Architect shall accrue to the Contractor or to any Subcontractor, consultant, engineer, supplier, fabricator, manufacturer, lender, tenant, insurer, surety or any other third party as a result of that agreement of the performance or nonperformance of the Architect's services thereunder.

Add the following paragraph:

13.8 Equal Opportunity

13.8.1
The Contractor shall maintain policies of employment as follows:

13.8.1.1
The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, sex, sexual orientation or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, sexual orientation or national origin. Such action shall include, but shall not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

13.8.1.2
The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, sexual orientation or national origin.

END OF SECTION

SECTION 001116 - INVITATION TO BID

1.1 PROJECT INFORMATION

A. Notice to Bidders: Qualified bidders are invited to submit bids for Project as described in this Document according to the Instructions to Bidders.

B. Project Identification: **ChurchWoods**

1. Project Location:
   4130 Old Post Road
   Charlestown, RI

C. Owner: **ChurchWoods, LLC**
   c/o Washington County Community Development Corp.
   400 Tower Hill Road
   North Kingstown, RI 02852
   Tel: 401.667.7185

1. Owner's Representative: Mr. Gerard Bertrand

   Washington County Community Development Corp.

D. Architect: Union Studio Architecture and Community Planning, Inc. Contact: Paul Attemann, 140 Union Studio, Providence, RI

E. Project Description:

1. **The "ChurchWoods"** project consists of new wood frame, slab on grade construction of twenty-four (24) one-bedroom dwelling units in seven (7) buildings, one community building and one well house. Project includes demolition of an existing building and parking area. Site improvements include, but not limited to new drive lane, parking, storm water management system, new septic, new well, site lighting, site power, and new landscaping.

F. Construction Contract: Bids will be received for the following Work:

1. General Contract (all trades).

1.2 BID SUBMITTAL AND OPENING

A. Owner will receive sealed bids until the bid time and date at the location indicated below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:

1. Bid Date: **July 1, 2016**

2. Bid Time: **11: a.m.** local time.
3. Location: **Union Studio Architecture & Community Planning**
140 Union Street
Providence, RI 02903

B. Bids will be thereafter opened in the presence of the bidders and read aloud.

1.3 BID SECURITY

A. Bid security shall be submitted with each bid in the amount of [**5**] five percent of the bid amount. No bids may be withdrawn for a period of [**60**] sixty days after opening of bids. Owner reserves the right to reject any and all bids and to waive informalities and irregularities.

1.4 PREBID CONFERENCE

A. A pre-bid conference for all bidders will be held at **4130 Old Post Road, Charlestown, RI on June 15, 2016 at 10:00 a.m., local time.** Prospective bidders are requested to attend.

1.5 INTERPRETATION & DISCREPENCIES

A. No oral interpretations will be made to any bidder regarding the meaning of the drawings and specifications. Every request for interpretation will be made in writing by the Bidder to Union Studio Architecture & Community Design, paul@unionstudioarch.com. Requests for interpretations submitted by sub-contractors will not be accepted. Every interpretation will be issued in the form of an Addenda and sent to all persons having received drawings and specifications. All Addenda will become part of the Contract Documents. Failure of any Bidder to receive such interpretation shall not relieve the Bidder from any obligation with respect to his/her bid. **Written requests for interpretations will not be accepted after June 24, 2016.**

B. The drawings and Specifications, Details and Schedules have been designed to be supportive of each other. Should discrepancies be discovered, the Architect shall be notified and clarification requested in writing upon discovery of said discrepancy. Should timing be a factor, then the higher cost/better product shall prevail until such time as clarification is received.

1.6 DOCUMENTS

A. Online Procurement and Contracting Documents: Obtain access after June 3, 2016 by contacting the Owner. Online access will be provided to **prime Bidders only.**

1.7 TIME OF COMPLETION AND LIQUIDATED DAMAGES

A. Bidders shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time. **Work is subject to liquidated damages.**

1.8 BIDDER'S QUALIFICATIONS

A. Bidders must be prequalified by Owner.

B. Bidders must submit a minimum of five (5) references for completed projects within the last five (5) years.

C. Bidders must submit a completed AIA Document A305 Contractor's Qualification Statement.

D. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. **A Performance Bond, a separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.**

1.9 SUCCESSFUL BIDDER

The successful Bidder shall be required to provide a Schedule of Values/trade breakdown for the total project within four (4) days of notification.

The successful Bidder shall provide with the Bid:

- Evidence of Performance & Payment Bond (as noted above)

The successful Bidder shall provide within four (4) calendar days of notification:

- Proposed Construction and Completion Schedule in bar chart form for the total project
- General Contractor's Financial Statement
- Proposed payment schedule
- Proposed subcontractors (trades, not companies) to be used
    - Owner reserves the right to review and approve the list of subcontractors submitted by the General Contractor.

The successful Bidder shall provide within 14 calendar days of signature of the Contract or Notice of Intent (whichever comes first):

- A schedule for the construction completion (to be updated every requisition period)

END OF DOCUMENT 001116

DOCUMENT 001153 - REQUEST FOR QUALIFICATIONS

1.1 PURPOSE, LAWS, AND REGULATIONS

A. The purpose of the Prequalification Procedure described in this Document is to provide Owner with a mechanism to evaluate and determine whether Prospective Bidders are qualified to participate in the construction of Project. Evaluation will be limited to that office of the Prospective Bidder that is proposed to perform the Work.

B. Prospective Bidders are required to comply with these Requirements for Prequalification. Only those Prospective Bidders who have complied with the Requirements for Prequalification and have been determined to be qualified will be eligible to submit construction bids on Project.

1.2 DEFINITIONS

A. Financial Statement: The requirement for submitting a financial statement as an attachment to AIA Document A305, "Contractor's Qualification Statement" shall be understood to mean a certified annual audit, prepared according to generally acceptable accounting practices and signed by an independent certified public accountant. [A Reviewed Statement of Assets and Liabilities, prepared and signed by an independent certified public accountant, is also acceptable.] A self-prepared annual compiled financial statement or balance sheet is unacceptable.

B. Prospective Bidder: A Prospective Bidder is a person or entity who submits a Submittal of Qualifications to Owner.

C. Project: Generally described in the Advertisement for Bids.

1.3 PREQUALIFICATION DOCUMENTS

A. Prequalification Documents: Consist of the Advertisement for Prequalification of Bidders; this Request for Qualifications document; AIA Document A305, "Contractor's Qualification Statement"; and additional documents issued by Owner.

B. Obtaining Prequalification Documents: Prospective Bidders may obtain complete sets of the Prequalification Documents from the issuing office designated in the Advertisement for Prequalification of Bidders. Prospective Bidders shall use complete sets of Prequalification Documents in preparing their submittal. Owner assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Prequalification Documents.

C. Interpretation or Correction of Prequalification Documents: If the Prospective Bidder is in doubt as to the interpretation of any part of the Prequalification Documents, or finds discrepancies in or omissions from any part of the Prequalification Documents, it must submit a written Request for Interpretation thereof no later than [**seven**] 7 days prior to acceptance of Submittals of Qualifications. Address all communications to Owner.

1.4 PREQUALIFICATION PROCEDURES

A. Form of Prequalification Submittal:

1. Submittals of Prequalification must be submitted in duplicate on AIA Document A305, "Contractor's Qualification Statement," properly executed and with all items filled out in ink or typed, and all additional data, attachments, and forms provided. Do not change or add words to the Qualification Statement or forms. All signatures must be original (and sealed if a corporation) and must be notarized and sealed by a Notary Public.

B. Modification to Requirements for Prequalification:

1. Clarifications, alterations, or changes made by Owner to the Requirements for Prequalification shall be in writing only. Verbal information is not valid or binding.
2. Modifications will be mailed or delivered to those Prospective Bidders having obtained Prequalification Documents from the issuing office.

C. Submission of Prequalification Documents:

1. Each Submittal of Prequalification shall be delivered to the location indicated in the Advertisement for Prequalification on or before the day and hour set for receipt of Submittals. Each Submittal of Prequalification shall be submitted in an opaque, sealed envelope marked in the lower left-hand corner as follows:

   a. Bidder's Prequalification Statement for Renovations to the Leonard Brown House.
   b. Prospective Bidder's Name.
   c. Prospective Bidder's Address.
   d. Contractor's License No.
   e. Date and Time for Submittal.

2. If not delivered in person, this envelope shall be enclosed in a second envelope for posting to the location indicated for receipt of bids. This envelope shall be addressed as follows:

   a. Bidder's Prequalification Statement for ChurchWoods
   b. Date and Time for Submittal.
   c. Attention: Mr. Gerard Bertrand
   d. ChurchWoods, LLC
   e. 400 Tower Hill Road, North Kingstown, RI 02852
   f. Contractor's License No. (In return address).

3. Include a completed copy of the Prequalification Checklist attached to the cover of the Submittal.
4. It is the sole responsibility of the Prospective Bidder to ensure that its submittal is received by the submittal date and time. No faxed or e-mail submittal or modification of a submittal will be considered. No submittal submitted after the time fixed for receiving submittals will be considered; late submittals will be returned to the Prospective Bidder unopened.
5. Owner reserves the right to waive any informality and to request additional information from Prospective Bidders, at Owner's discretion.

D. Attachments:

1. Prospective Bidders shall complete all required forms and attachments described in the Prequalification Documents, entering "Not Applicable" where information does not apply. Absence of any of the forms included in the Prequalification Documents will be reason for possible disqualification.

E. Status of Prospective Bidders:

1. Proprietors submitting bids shall indicate their status as proprietors.
2. Prospective Bidders submitting qualifications for partnerships shall indicate their status as partners and shall submit a certified copy of the power of attorney authorizing the executor of the submittal to bind the partnership.
3. Prospective Bidders submitting qualifications for corporations shall indicate their status as corporations and shall submit a certified copy of the board of directors' authorization for the Prospective Bidder to bind the corporation and shall affix the corporate seal on the submittal.
4. Prospective Bidders shall provide the following:

a. Names and addresses of proprietors, of all members of a partnership, or of the corporation's officers.
b. Name of jurisdiction where the partnership is registered or where the corporation is incorporated. Corporations must be licensed to do business in Project state at the time of executing the Contract.

1.5 WITHDRAWAL

A. A Qualification Statement may be withdrawn on personal request received from the Prospective Bidder.

1.6 PREQUALIFICATION CRITERIA

A. Prospective Bidders must demonstrate the following to the satisfaction of Owner:

1. Proper license under the laws and regulations governing their respective trade(s).

2. Capacity to provide Performance Bond, Labor and Material Payment Bond, and Insurance in a form acceptable to Owner in amounts adequate to bond the Work based on the scope indicated in the Advertisement for Pre-qualifications.
3. Applicable experience of firm as described in the Contractor's Qualification Statement, including the following:

a. Experience of Firm: The firm in its current organization shall have successfully completed minimum of [**five**] 5 projects of similar type, quality, and scope, including a minimum of [**two**] 2 within the last [**three**] 3 years. The firm shall have a record of project completion, credit record, record of judgment claims, arbitration proceedings, and suits pending or outstanding acceptable to Owner.
b. Experience of Firm Officers: The firm officers shall have personal record of project completion acceptable to Owner.
c. Experience of Project and Field Management Staff to Be Committed by the Prospective Bidder to Carry Out the Work: The assigned project manager and field

superintendent must have successfully completed minimum of [**five**] 5 projects of similar type, quality, and scope.

d. For purposes of this submittal, reference to "key individuals" as described in the Contractor's Qualification Statement shall be understood to mean the principal in charge, the project manager(s), and the project field superintendent(s) committed by the Prospective Bidder to carry out the Work of this Project. Prospective Bidder by submitting qualifications of key individuals agrees that Owner reserves the right to approve or reject subsequent reassignment of key individuals.

e. For purposes of this submittal, "successful completion" shall be understood to mean completion of project within project schedule and budget. Provide additional information indicating reasons why any referenced project did not meet project schedule or project budget.

f. For purposes of this Qualification, "similar project" shall be understood to include the following project elements:

1) Light frame, load-bearing construction.

2) Affordable housing

4. Adequate financial resources, including ability to secure materials and labor necessary for completion of the Work and other work in hand, within the anticipated contract times, and reflecting the anticipated retainage from progress payments.
5. Work-in-hand capacity, such that the Prospective Bidder demonstrates adequate work under contract to continue its business operations at least at their current level, at the same time indicating the capability to carry out Owner's proposed work.
6. Adequate organization to complete work of the scope anticipated, including firm management, project management, field superintendence, and field engineering and quality control.
7. Acceptable past performance as indicated by firm's references, including ability to meet contract time and to monitor, manage, and communicate interim scheduling requirements, to carry out required quality-control activities, to properly prepare interim and final payment requests, and to successfully complete project closeout requirements.
8. Acceptable documentation of firm's ability to comply with Owner's Minority-owned business enterprise/woman-owned business enterprise (MBE/WBE) requirements. Prospective Bidders shall contact Owner to obtain copies of requirements.
9. Acceptable documentation of firm's employee screening practices as indicating by affidavit describing background check procedures for firm's employees and requirements for same incorporated in firm's subcontracts.

B. Consideration of qualifications may be withheld if the Qualification Statement shows any unexplained erasures, omissions, alterations of form, additions not called for, added restrictions or qualifying conditions, or other irregularities of any kind.

C. Owner may make such investigations as it deems necessary to determine the ability of the Prospective Bidder to perform the Work, and the Prospective Bidder shall furnish to Owner all such information for this purpose as Owner may request. Owner reserves the right to withhold qualification if the evidence submitted by or investigation of such Prospective Bidder fails to satisfy Owner that such Prospective Bidder is properly qualified to carry out the obligations of the proposed Project. The determination of which bidders are prequalified is not protestable, except as allowed by law.

D. Prequalification Submittal and data contained therein is considered privileged and confidential and will not be disclosed to any outside party except as required by law.

1.7 BONDS AND INSURANCE

A. The Prospective Bidder shall provide as part of the Submittal of Qualifications evidence of its ability to furnish below:

1. Performance Bond, a Payment Bond, and a Labor and Material Bond, each in the amount of 100 percent of the Contract Sum, with a corporate surety authorized to transact business in Project's jurisdiction.

2. Physical Alteration Permit Bond: Bidder to include and comply with RI Department of Transportation ‘Rules and Regulations Concerning Permission for Use of State Highway Rights-of-Way’ and bonding requirements for full value of all work within the State right-of-way along Old Post Road and any work that is not within the State right-of-way that may affect the State. The estimate of the cost of work to include materials, labor, traffic control and associated work items.

3. Owner’s Builder’s Risk insurance naming general contractor and State of Rhode Island, Office of Housing and Community Development as additionally insured

4. Contractor’s Certificate of Liability Insurance

5. Satisfactory certificates of insurance in the amount and types required by statute, but not less than the following:

   a. Professional design errors and omissions insurance endorsement for delegated design by Contractor's professional engineer.
   b. Workers' Compensation insurance provisions: statutory limits.
   c. Commercial General Liability insurance provisions: at limits established by Owner in Project Contract Documents and including below:

      1) **EIFS Endorsement or separate certificate.**
      2) **Mold Endorsement or separate certificate.**

1.8 ACCEPTANCE OF QUALIFICATIONS

A. Prospective bidders will be notified of Owner's determination, within [**14**] fourteen days from the date of submission.

B. Evaluations will be confidential. Notifications will be publicly available information.

C. Owner may deny prequalification if it finds one or more of the following:

1. The Prospective Bidder does not have sufficient financial capacity to perform the Work.
2. The Prospective Bidder does not have the appropriate experience to perform the Work, including, but not limited to, having met the experience criteria set forth herein.
3. The Prospective Bidder or any officer, director, or owner thereof has had judgments entered against him within the past five years for the breach of contracts for

governmental or nongovernmental construction work including, but not limited to, design-build or construction management contracts.

4. The Prospective Bidder has been in substantial noncompliance with the terms and conditions of prior construction with Owner, or in documented substantial noncompliance with the terms and conditions of prior construction with another public body without good cause.
5. The Prospective Bidder or any officer, director, owner, or chief financial official thereof has been convicted within the past 10 years of a crime related to governmental or nongovernmental construction or contracting.
6. The Prospective Bidder or any officer, director, or owner thereof is currently debarred pursuant to an established debarment procedure from bidding or contracting by any public body, agency of another state, or agency of the Federal Government.
7. The Prospective Bidder failed to provide to the public body in a timely manner any information required by the public body relevant to the six preceding subparagraphs.
8. The Prospective Bidder provides false, nonresponsive, misleading, or incomplete information for items required herein.

D. The acceptance of a Prospective Bidder's qualifications will be a Notice of Prequalification, signed by a duly authorized representative of Owner; no other act by Owner or its agents shall constitute the acceptance of qualifications. The acceptance of a Prospective Bidder's qualifications by Owner does not constitute a contract or promise to award a contract to the Prospective Bidder.

1.9 PROSPECTIVE BIDDER'S CHECKLIST

A. In an effort to assist the Prospective Bidder in properly completing all documentation required, the following checklist is provided for the Prospective Bidder's convenience. The Prospective Bidder is solely responsible for verifying compliance with prequalification requirements.

B. Attach this completed checklist to the outside of the Submittal envelope:

_____Reviewed the Prequalification Documents, including the Advertisement for Prequalification and Requirements for Prequalification, prior to preparing this submittal.

_____Prepared AIA Document A305, "Contractor's Qualification Statement," as required by the document instructions and by the Requirements for Prequalification, including all attachments and data required as part of the Qualification Statement, properly notarized.

_____Attached: Copy of applicable Contractor's license(s).

_____Attached: Affidavit of Employee Screening.

_____Attached: Resumes of key individuals.

_____Attached: Other attachments as necessary to provide information required.

_____Envelope shows name and address of the Prospective Bidder.

_____Envelope shows the Prospective Bidder's Contractor's License No.

_____By submitting notarized statement, the Prospective Bidder certifies that the Bidder can provide executed Performance Bond and Labor and Material Bond meeting requirements given in the Requirements for Prequalification.

_____By submitting notarized statement, the Prospective Bidder certifies that the Bidder can provide Certificates of Insurance in the amounts indicated in the Requirements for Prequalification.

END OF DOCUMENT 001153

DOCUMENT 001200 – TERMINATION CLAUSE

In a construction contract, failure to perform work for a period of 10 working days without the Owner's permission is cause for the cancellation of the contract.

END OF DOCUMENT 001200

FEDERAL CONSTRUCTION CONTRACT PROVISIONS

(Contracts over $100,000)

STATE OF RHODE ISLAND

COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM

RI Office of Housing & Community Development

One Capitol Hill, 3rd Floor

Providence, RI 02908

Note: This document is to be used as a guide for contractors and subcontractors working on Community Development Block Grant projects in the State of Rhode Island. It is not verified to be all inclusive and the contractor is fully responsible for complying with all federal regulations applicable to the CDBG program.

Certification Regarding Debarment and Suspension

U.S. Department of Housing and Urban Development

Certification A: Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief that its principals;

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal debarment or agency;

b. Have not within a three-year period preceding this proposal, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification, or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

d. Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Instructions for Certification (A)

1. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

2. The inability of a person to provide the certification required below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such person from participation in this transaction.

3. The certification in this clause is a material representation of fact upon which reliance was place when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

4. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if at any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The terms **covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded**, as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of these regulations.

6. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

7. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

8. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines this eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

10. Except for transactions authorized under paragraph (6) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

Certification B: Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Instructions for Certification (B)

1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms **covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded**, as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of these regulations.

5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph (5) of these instructions, if a participant in a lower covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies including suspension and/or debarment.

Applicant	Date

Signature of Authorized Certifying Official	Title

REQUIRED CONTRACT PROVISIONS <u>TO BE PROVIDED BY RECIPIENT</u>

(To the best of our knowledge, federal templates are not currently available for items A and B, below. Grant recipients must develop/use their own contract language to meet the requirements specified below.)

(A) Contracts for more than the simplified acquisition threshold currently set at $150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

(B) All contracts in excess of $10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

Equal Employment Opportunity Certification

Excerpt From 41 CFR §60-1.4(b)

U.S. Department of Housing and Urban Development
Office of Housing
Federal Housing Commissioner

Department of Veterans Affairs

OMB Control No. 2502-0029
(exp. 9/30/2016)

The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin, such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: **Provided, however,** That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work:

Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and Federally-assisted construction contracts pursuant to the Executive order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed

Firm Name and Address	By
	Title

upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

Excerpt from HUD Regulations

200.410Definition of term "applicant".

(a) In multifamily housing transactions where controls over the mortgagor are exercised by the Commissioner either through the ownership of corporate stock or under the provisions of a regulatory agreement, the term "applicant" as used in this subpart shall mean the mortgagor.

(b) In transactions other than those specified in paragraph(a) of this section, the term "applicant" as used in this subpart shall mean the builder, dealer or contractor performing the construction, repair or rehabilitation work for the mortgagor or other borrower.

200.420Equal Opportunity Clause to be included in contracts and subcontracts.

(a) The following equal opportunity clause shall be included in each contract and subcontract which is not exempt:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The contractor will take affirmative action to ensured that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of the nondiscrimination clause.

(2)The contractor will in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard race, creed, color, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided, advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notices in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 10925 of March 6 1961, as amended, and of the regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(5) The contractor will furnish all information and reports required by Executive Order 10925 of March 6, 1961, as amended, and by the regulations, and orders of the said Committee , or pursuant thereto, and will permit access to his books, records, and accounts by HUD and the Committee for purposes of investigation to ascertain compliance with such regulations, and orders.

(6) In the event of the contractor's non-compliance with the nondiscrimination clause of this contract or with any of the said regulations, or orders, this contract may be cancelled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or Federally-assisted construction contracts in accordance with procedures authorized in Executive Order 10925 of March 6, 1961, as amende, and such other sanctions may be imposed and remedies invoke s provided in the said Executive Order or by regulations, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

(7) The contractor will include the provisions of Paragraphs(1) through (7) in every subcontract or purchase order unless exempted by regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to Section 303 of Executive Order 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each subcontractor or vender. The contractor will take such action with respect to any subcontract or purchase orders as HUD may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vender as a result of such direction by HUD, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

(b) Except in subcontracts for the performance of construction work at the site of construction, the clause is not required to be inserted in subcontracts below the second tier. Subcontracts may incorporate by referenced to the equal opportunity clause.

200.425Modification in and exemptions from the regulations in this subpart.

(a) The following transactions and contracts are exempt from the regulations in this subpart:

(1) Loans, mortgages, contracts and subcontracts not exceeding $10,000.

(2) Contract and subcontracts not exceeding $100,000 for standard commercial supplies or raw material;

(3)Contracts and subcontracts under which work is to be or has been performed outside the United States and where no recruitment of workers within the United States in involved. To the extent that work pursuant to such contracts is done within the Untied States, the equal opportunity clause shall be applicable;

(4) Contracts for the sale of Government property where no appreciable amount of work is involved; and

(5) Contracts and subcontracts for an indefinite quantity which are not to extend for ore than one year if the purchaser determines that the amounts to be ordered under any such contract or subcontract are not reasonably expected to exceed $100,000 in the case of contracts or subcontracts for standard commercial supplies and raw materials, or $10,000 in the case of all other contracts and subcontracts.

§401.14 Standard patent rights clauses.

(a) The following is the standard patent rights clause to be used as specified in §401.3(a).

Patent Rights (Small Business Firms and Nonprofit Organizations)

(a) Definitions

(1) *Invention* means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321 *et seq.*).

(2) *Subject invention* means any invention of the *contractor* conceived or first actually reduced to practice in the performance of work under this *contract,* provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d)) must also occur during the period of *contract* performance.

(3) *Practical Application* means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or government regulations, available to the public on reasonable terms.

(4) *Made* when used in relation to any invention means the conception or first actual reduction to practice of such invention.

(5) *Small Business Firm* means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standards for small business concerns involved in government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

(6) *Nonprofit Organization* means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c) and exempt from taxation under section 501(a) of the Internal Revenue Code (25 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.

(b) Allocation of Principal Rights

The *Contractor* may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the *Contractor* retains title, the Federal government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(c) Invention Disclosure, Election of Title and Filing of Patent Application by *Contractor*

(1) The *contractor* will disclose each subject invention to the *Federal Agency* within two months after the inventor discloses it in writing to *contractor* personnel responsible for patent matters. The disclosure to the agency shall be in the form of a written report and shall identify the *contract* under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the

invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the *agency,* the *Contractor* will promptly notify the *agency* of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the *contractor.*

(2) The *Contractor* will elect in writing whether or not to retain title to any such invention by notifying the *Federal agency* within two years of disclosure to the *Federal agency.* However, in any case where publication, on sale or public use has initiated the one year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the *agency* to a date that is no more than 60 days prior to the end of the statutory period.

(3) The *contractor* will file its initial patent application on a subject invention to which it elects to retain title within one year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The *contractor* will file patent applications in additional countries or international patent offices within either ten months of the corresponding initial patent application or six months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure, election, and filing under subparagraphs (1), (2), and (3) may, at the discretion of the *agency,* be granted.

(d) Conditions When the Government May Obtain Title

The *contractor* will convey to the *Federal agency,* upon written request, title to any subject invention—

(1) If the *contractor* fails to disclose or elect title to the subject invention within the times specified in (c), above, or elects not to retain title; provided that the *agency* may only request title within 60 days after learning of the failure of the *contractor* to disclose or elect within the specified times.

(2) In those countries in which the *contractor* fails to file patent applications within the times specified in (c) above; provided, however, that if the *contractor* has filed a patent application in a country after the times specified in (c) above, but prior to its receipt of the written request of the *Federal agency,* the *contractor* shall continue to retain title in that country.

(3) In any country in which the *contractor* decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum Rights to *Contractor* and Protection of the *Contractor* Right to File

(1) The *contractor* will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the *contractor* fails to disclose the invention within the times specified in (c), above. The *contractor's* license extends to its domestic subsidiary and affiliates, if any, within the corporate structure of which the *contractor* is a party and includes the right to grant sublicenses of the same scope to the extent the *contractor* was legally obligated to do so at the time the *contract* was awarded. The license is transferable only with the approval of the *Federal agency* except when transferred to the successor of that party of the *contractor's* business to which the invention pertains.

(2) The *contractor's* domestic license may be revoked or modified by the *funding Federal agency* to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR part 404 and *agency* licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the *contractor* has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the *funding Federal agency* to the extent the *contractor,* its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, the *funding Federal agency* will furnish the *contractor* a written notice of its intention to revoke or modify the license, and the *contractor* will be allowed thirty days (or such

other time as may be authorized by the *funding Federal agency* for good cause shown by the *contractor*) after the notice to show cause why the license should not be revoked or modified. The *contractor* has the right to appeal, in accordance with applicable regulations in 37 CFR part 404 and *agency* regulations (if any) concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of the license.

(f) *Contractor* Action to Protect the Government's Interest

(1) The *contractor* agrees to execute or to have executed and promptly deliver to the *Federal agency* all instruments necessary to (i) establish or confirm the rights the Government has throughout the world in those subject inventions to which the *contractor* elects to retain title, and (ii) convey title to the *Federal agency* when requested under paragraph (d) above and to enable the government to obtain patent protection throughout the world in that subject invention.

(2) The *contractor* agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the *contractor* each subject invention made under *contract* in order that the *contractor* can comply with the disclosure provisions of paragraph (c), above, and to execute all papers necessary to file patent applications on subject inventions and to establish the government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by (c)(1), above. The *contractor* shall instruct such employees through employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The *contractor* will notify the *Federal agency* of any decisions not to continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than thirty days before the expiration of the response period required by the relevant patent office.

(4) The *contractor* agrees to include, within the specification of any United States patent applications and any patent issuing thereon covering a subject invention, the following statement, “This invention was made with government support under (identify the *contract*) awarded by (identify the Federal agency). The government has certain rights in the invention.”

(g) Subcontracts

(1) The *contractor* will include this clause, suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental or research work to be performed by a small business firm or domestic nonprofit organization. The subcontractor will retain all rights provided for the *contractor* in this clause, and the *contractor* will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

(2) The *contractor* will include in all other subcontracts, regardless of tier, for experimental developmental or research work the patent rights clause required by (*cite section of agency implementing regulations or FAR*).

(3) In the case of subcontracts, at any tier, when the prime award with the Federal agency was a contract (but not a grant or cooperative agreement), the *agency,* subcontractor, and the contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subcontractor and the Federal agency with respect to the matters covered by the clause; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the Contract Disputes Act in connection with proceedings under paragraph (j) of this clause.

(h) Reporting on Utilization of Subject Inventions

The *Contractor* agrees to submit on request periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the *contractor* or its licensees or assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the contractor, and such other data and information as the *agency* may reasonably specify. The *contractor* also agrees to provide additional reports as may be requested by the *agency* in connection with any march-in proceeding undertaken by the *agency* in accordance with paragraph (j) of this clause.

As required by 35 U.S.C. 202(c)(5), the *agency* agrees it will not disclose such information to persons outside the government without permission of the *contractor.*

(i) Preference for United States Industry

Notwithstanding any other provision of this clause, the *contractor* agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject inventions in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the *Federal agency* upon a showing by the *contractor* or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

(j) March-in Rights

The *contractor* agrees that with respect to any subject invention in which it has acquired title, the *Federal agency* has the right in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of the *agency* to require the *contractor,* an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the *contractor,*assignee, or exclusive licensee refuses such a request the *Federal agency* has the right to grant such a license itself if the *Federal agency* determines that:

(1) Such action is necessary because the *contractor* or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use.

(2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the *contractor,* assignee or their licensees;

(3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the *contractor,* assignee or licensees; or

(4) Such action is necessary because the agreement required by paragraph (i) of this clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

(k) Special Provisions for *Contracts* with Nonprofit Organizations

If the *contractor* is a nonprofit organization, it agrees that:

(1) Rights to a subject invention in the United States may not be assigned without the approval of the *Federal agency,* except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the *contractor;*

(2) The *contractor* will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;

(3) The balance of any royalties or income earned by the *contractor* with respect to subject inventions, after payment of expenses (including payments to inventors) incidential to the administration of subject inventions, will be utilized for the support of scientific research or education; and

(4) It will make efforts that are reasonable under the circumstances to attract licensees of subject invention that are small business firms and that it will give a preference to a small business firm when licensing a subject invention if the *contractor* determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided, that the *contractor* is also satisfied that the small business firm has the

General Decision Number: RI160002 03/11/2016 RI2

Superseded General Decision Number: RI20150002

State: Rhode Island

Construction Type: Residential

Counties: Bristol, Kent, Providence and Washington Counties in Rhode Island.

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/08/2016
1	01/15/2016
2	02/12/2016
3	03/11/2016

ASBE0006-009 09/01/2015

	Rates	Fringes
INSULATOR - PIPE & PIPEWRAPPER Includes application of all insulating materials, protective coverings, coatings & finishes to all types of mechanical systems.	$ 39.43	25.65

ELEC0099-004 12/01/2014

	Rates	Fringes
ELECTRICIAN.....	$ 26.50	6.55%+13.72

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

ELEV0039-002 01/01/2016

	Rates	Fringes
ELEVATOR MECHANIC.....	$ 47.37	29.985+A+B

FOOTNOTES:

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

B. Employer contributes 8% basic hourly rate for 5 years or more of service of 6% basic hourly rate for 6 months to 5 years of service as vacation pay credit.

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* ENGI0057-004 11/29/2015

	Rates	Fringes
Power Equipment Operator Grader and Roller.....	$ 34.50	24.10+a

Paver.....$ 35.42 24.10+a

a. FOOTNOTES: Any employee who works 3 days in the week in which a holiday falls shall be paid for the holiday.

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

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

ROOF0033-002 01/01/2016

	Rates	Fringes
ROOFER	$ 33.53	21.84

SURI1999-002 04/12/1999

	Rates	Fringes
BRICKLAYER	$ 20.45	11.40
CARPENTER Including Acoustical Ceiling Installation, Drywall Hanging, & Metal Stud Framing	$ 15.32	9.65
Cement Mason/Finisher	$ 20.45	11.40
Drywall Finisher/Taper	$ 20.55	8.50
FLOOR LAYER: Carpet	$ 15.62	9.65
INSULATOR - BATT	$ 19.56	9.65
LABORER Unskilled, Landscape, & Brick Mason Tender	$ 18.47	8.10
PAINTER (Brush and Roller)	$ 20.55	8.50
PLASTERER	$ 13.50	2.45
PLUMBER	$ 23.96	8.95
Power Equipment Operator Backhoe	$ 20.27	8.98
SPRINKLER FITTER	$ 24.24	9.81

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

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

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

Union Rate Identifiers

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

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION

capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the *contractor.* However, the *contractor* agrees that the Secretary may review the *contractor's* licensing program and decisions regarding small business applicants, and the *contractor* will negotiate changes to its licensing policies, procedures, or practices with the Secretary when the Secretary's review discloses that the *contractor* could take reasonable steps to implement more effectively the requirements of this paragraph (k)(4).

(l) Communication

(Complete According to Instructions at 401.5(b))

(b) When the Department of Energy (DOE) determines to use alternative provisions under §401.3(a)(4), the standard clause at §401.14(a), of this section, shall be used with the following modifications unless a substitute clause is drafted by DOE:

(1) The title of the clause shall be changed to read as follows: *Patent Rights to Nonprofit DOE Facility Operators*

(2) Add an “(A)” after “(1)” in paragraph (c)(1) and add subparagraphs (B) and (C) to paragraph (c)(1) as follows:

(B) If the subject invention occurred under activities funded by the naval nuclear propulsion or weapons related programs of *DOE,* then the provisions of this subparagraph (c)(1)(B) will apply in lieu of paragraphs (c)(2) and (3). In such cases the contractor agrees to assign the government the entire right, title, and interest thereto throughout the world in and to the subject invention except to the extent that rights are retained by the contractor through a greater rights determination or under paragraph (e), below. The contractor, or an employee-inventor, with authorization of the contractor, may submit a request for greater rights at the time the invention is disclosed or within a reasonable time thereafter. *DOE* will process such a request in accordance with procedures at 37 CFR 401.15. Each determination of greater rights will be subject to paragraphs (h)-(k) of this clause and such additional conditions, if any, deemed to be appropriate by the *Department of Energy.*

(C) At the time an invention is disclosed in accordance with (c)(1)(A) above, or within 90 days thereafter, the contractor will submit a written statement as to whether or not the invention occurred under a naval nuclear propulsion or weapons-related program of the *Department of Energy.* If this statement is not filed within this time, subparagraph (c)(1)(B) will apply in lieu of paragraphs (c)(2) and (3). The contractor statement will be deemed conclusive unless, within 60 days thereafter, the Contracting Officer disagrees in writing, in which case the determination of the Contracting Officer will be deemed conclusive unless the contractor files a claim under the Contract Disputes Act within 60 days after the Contracting Officer's determination. Pending resolution of the matter, the invention will be subject to subparagraph (c)(1)(B).

(3) Paragraph (k)(3) of the clause will be modified as prescribed at §401.5(g).

(c) As prescribed in §401.3, replace (b) of the basic clause with the following paragraphs (1) and (2):

(b) Allocation of principal rights. (1) The Contractor may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause, including (2) below, and 35 U.S.C. 203. With respect to any subject invention in which the Contractor retains title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(2) If the Contractor performs services at a Government owned and operated laboratory or at a Government owned and contractor operated laboratory directed by the Government to fulfill the Government's obligations under a Cooperative Research and Development Agreement (CRADA) authorized by 15 U.S.C. 3710a, the Government may require the Contractor to negotiate an agreement with the CRADA collaborating party or parties regarding the allocation of rights to any subject invention the Contractor makes, solely or jointly, under the CRADA. The agreement shall be negotiated prior to the Contractor undertaking the CRADA work or, with the permission of the Government, upon the identification of a subject invention. In the absence of such an agreement, the Contractor agrees to grant

the collaborating party or parties an option for a license in its inventions of the same scope and terms set forth in the CRADA for inventions made by the Government.

[52 FR 8554, Mar. 18, 1987, as amended at 69 FR 17301, Apr. 2, 2004]

Clean Water Requirements

33 U.S.C. 1251

Clean Water - (1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq . The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to OHCD/HUD and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by the State.

CLEAN AIR

42 U.S.C. 7401 et seq
40 CFR 15.61
49 CFR Part 18

Clean Air - (1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 *et seq*. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to OHCD/HUD and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by OHCD/HUD.

Source: Federal Transit Administration. http://www.fta.dot.gov/12831_6195.html#BM7

Lobbying

31 U.S.C. 1352
49 CFR Part 19
49 CFR Part 20

APPENDIX A, 49 CFR PART 20--CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

(To be submitted with each bid or offer exceeding $100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq* .)]
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq., apply* to this certification and disclosure, if any.

_____ Signature of Contractor's Authorized Official

_____ Name and Title of Contractor's Authorized Official

_____ Date

Source: Federal Transit Administration. http://www.fta.dot.gov/12831_6195.html#BM7

Title 37: Patents, Trademarks, and Copyrights
PART 401—RIGHTS TO INVENTIONS MADE BY NONPROFIT ORGANIZATIONS AND SMALL BUSINESS FIRMS UNDER GOVERNMENT GRANTS, CONTRACTS, AND COOPERATIVE AGREEMENTS

§401.14 Standard patent rights clauses.

(a) The following is the standard patent rights clause to be used as specified in §401.3(a).

Patent Rights (Small Business Firms and Nonprofit Organizations)

(a) Definitions

(1) *Invention* means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321 *et seq.*).

(2) *Subject invention* means any invention of the *contractor* conceived or first actually reduced to practice in the performance of work under this *contract,* provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d)) must also occur during the period of *contract* performance.

(3) *Practical Application* means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or government regulations, available to the public on reasonable terms.

(4) *Made* when used in relation to any invention means the conception or first actual reduction to practice of such invention.

(5) *Small Business Firm* means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standards for small business concerns involved in government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

(6) *Nonprofit Organization* means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c) and exempt from taxation under section 501(a) of the Internal Revenue Code (25 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.

(b) Allocation of Principal Rights

The *Contractor* may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the *Contractor* retains title, the Federal government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(c) Invention Disclosure, Election of Title and Filing of Patent Application by *Contractor*

(1) The *contractor* will disclose each subject invention to the *Federal Agency* within two months after the inventor discloses it in writing to *contractor* personnel responsible for patent matters. The disclosure

to the agency shall be in the form of a written report and shall identify the *contract* under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the*agency,* the *Contractor* will promptly notify the *agency* of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the *contractor.*

(2) The *Contractor* will elect in writing whether or not to retain title to any such invention by notifying the *Federal agency* within two years of disclosure to the *Federal agency.* However, in any case where publication, on sale or public use has initiated the one year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the *agency* to a date that is no more than 60 days prior to the end of the statutory period.

(3) The *contractor* will file its initial patent application on a subject invention to which it elects to retain title within one year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The *contractor* will file patent applications in additional countries or international patent offices within either ten months of the corresponding initial patent application or six months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure, election, and filing under subparagraphs (1), (2), and (3) may, at the discretion of the *agency,* be granted.

(d) Conditions When the Government May Obtain Title

The *contractor* will convey to the *Federal agency,* upon written request, title to any subject invention—

(1) If the *contractor* fails to disclose or elect title to the subject invention within the times specified in (c), above, or elects not to retain title; provided that the *agency* may only request title within 60 days after learning of the failure of the *contractor* to disclose or elect within the specified times.

(2) In those countries in which the *contractor* fails to file patent applications within the times specified in (c) above; provided, however, that if the *contractor* has filed a patent application in a country after the times specified in (c) above, but prior to its receipt of the written request of the *Federal agency,* the *contractor* shall continue to retain title in that country.

(3) In any country in which the *contractor* decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum Rights to *Contractor* and Protection of the *Contractor* Right to File

(1) The *contractor* will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the *contractor* fails to disclose the invention within the times specified in (c), above. The*contractor's* license extends to its domestic subsidiary and

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Revenue
DIVISION OF TAXATION
One Capitol Hill
Providence, RI 02908-5800

CERTIFICATE OF EXEMPTION

WASHINGTON COUNTY COMMUNITY DEVELOPMENT CORPORATION
404 Tower Hill Road
North Kingstown, RI 02852

THIS IS TO CERTIFY THAT THE ABOVE-NAMED INSTITUTION HAS QUALIFIED FOR EXEMPTION PURSUANT TO THE PROVISIONS OF THE RHODE ISLAND SALES AND USE TAX ACT, CHAPTER 18, TITLE 44, OF THE GENERAL LAWS OF 1956, AS AMENDED, AND IS ACCORDINGLY EXEMPT FROM THE PAYMENT OF THE SALES TAX ON SALES MADE TO IT AND FROM THE USE TAX ON THE STORAGE, USE OR OTHER CONSUMPTION OF TANGIBLE PERSONAL PROPERTY BY IT.

THIS CERTIFICATE DOES NOT EXPIRE AND IS GOOD FOR THE EXISTENCE OF THE ORGANIZATION.

DAVID M. SULLIVAN
TAX ADMINISTRATOR

BY: _____
WILLIAM J. LYNCH
CHIEF REVENUE AGENT
FIELD AUDIT SERVICE

CERTIFIED NUMBER: 10589

DATE ISSUED: June 6, 2006

DUPLICATE 3/12/2012 ADDRESS CHANGE

TDD (401) 222-6287 (Telecommunication Device for the Deaf)

affiliates, if any, within the corporate structure of which the *contractor* is a party and includes the right to grant sublicenses of the same scope to the extent the *contractor* was legally obligated to do so at the time the *contract* was awarded. The license is transferable only with the approval of the *Federal agency* except when transferred to the sucessor of that party of the *contractor's* business to which the invention pertains.

(2) The *contractor's* domestic license may be revoked or modified by the *funding Federal agency* to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR part 404 and *agency* licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the *contractor* has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the *funding Federal agency* to the extent the *contractor,* its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, the *funding Federal agency* will furnish the *contractor* a written notice of its intention to revoke or modify the license, and the *contractor* will be allowed thirty days (or such other time as may be authorized by the *funding Federal agency* for good cause shown by the *contractor*) after the notice to show cause why the license should not be revoked or modified. The *contractor* has the right to appeal, in accordance with applicable regulations in 37 CFR part 404 and*agency* regulations (if any) concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of the license.

(f) *Contractor* Action to Protect the Government's Interest

(1) The *contractor* agrees to execute or to have executed and promptly deliver to the *Federal agency* all instruments necessary to (i) establish or confirm the rights the Government has throughout the world in those subject inventions to which the*contractor* elects to retain title, and (ii) convey title to the *Federal agency* when requested under paragraph (d) above and to enable the government to obtain patent protection throughout the world in that subject invention.

(2) The *contractor* agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the *contractor* each subject invention made under *contract* in order that the *contractor* can comply with the disclosure provisions of paragraph (c), above, and to execute all papers necessary to file patent applications on subject inventions and to establish the government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by (c)(1), above. The *contractor* shall instruct such employees through employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The *contractor* will notify the *Federal agency* of any decisions not to continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than thirty days before the expiration of the response period required by the relevant patent office.

(4) The *contractor* agrees to include, within the specification of any United States patent applications and any patent issuing thereon covering a subject invention, the following statement, “This invention was made with government support under (identify the *contract*) awarded by (identify the Federal agency). The government has certain rights in the invention.”

(g) Subcontracts

(1) The *contractor* will include this clause, suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental or research work to be performed by a small business firm or domestic nonprofit organization. The subcontractor will retain all rights provided for the *contractor* in this clause, and the *contractor* will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

(2) The *contractor* will include in all other subcontracts, regardless of tier, for experimental developmental or research work the patent rights clause required by (*cite section of agency implementing regulations or FAR*).

(3) In the case of subcontracts, at any tier, when the prime award with the Federal agency was a contract (but not a grant or cooperative agreement), the *agency,* subcontractor, and the contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subcontractor and the Federal agency with respect to the matters covered by the clause; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the Contract Disputes Act in connection with proceedings under paragraph (j) of this clause.

(h) Reporting on Utilization of Subject Inventions

The *Contractor* agrees to submit on request periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the *contractor* or its licensees or assignees. Such reports shall include information regarding the status of development, date of first commerical sale or use, gross royalties received by the contractor, and such other data and information as the *agency* may reasonably specify. The *contractor* also agrees to provide additional reports as may be requested by the *agency* in connection with any march-in proceeding undertaken by the *agency* in accordance with paragraph (j) of this clause. As required by 35 U.S.C. 202(c)(5), the *agency* agrees it will not disclose such information to persons outside the government without permission of the *contractor.*

(i) Preference for United States Industry

Notwithstanding any other provision of this clause, the *contractor* agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject inventions in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the *Federal agency* upon a showing by the *contractor* or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commerically feasible.

(j) March-in Rights

The *contractor* agrees that with respect to any subject invention in which it has acquired title, the *Federal agency* has the right in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of the *agency* to require the *contractor,* an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the *contractor,*assignee, or exclusive licensee refuses such a request the *Federal agency* has the right to grant such a license itself if the *Federal agency* determines that:

(1) Such action is necessary because the *contractor* or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use.

(2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the *contractor,* assignee or their licensees;

(3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the *contractor,* assignee or licensees; or

(4) Such action is necessary because the agreement required by paragraph (i) of this clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

(k) Special Provisions for *Contracts* with Nonprofit Organizations

If the *contractor* is a nonprofit organization, it agrees that:

(1) Rights to a subject invention in the United States may not be assigned without the approval of the *Federal agency,* except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the *contractor;*

(2) The *contractor* will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;

(3) The balance of any royalties or income earned by the *contractor* with respect to subject inventions, after payment of expenses (including payments to inventors) incidential to the administration of subject inventions, will be utilized for the support of scientific research or education; and

(4) It will make efforts that are reasonable under the circumstances to attract licensees of subject invention that are small business firms and that it will give a preference to a small business firm when licensing a subject invention if the *contractor*determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided, that the *contractor* is also satisfied that the small business firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the *contractor.* However, the *contractor*agrees that the Secretary may review

the *contractor's* licensing program and decisions regarding small business applicants, and the *contractor* will negotiate changes to its licensing policies, procedures, or practices with the Secretary when the Secretary's review discloses that the *contractor* could take reasonable steps to implement more effectively the requirements of this paragraph (k)(4).

(l) Communication

(Complete According to Instructions at 401.5(b))

(b) When the Department of Energy (DOE) determines to use alternative provisions under §401.3(a)(4), the standard clause at §401.14(a), of this section, shall be used with the following modifications unless a substitute clause is drafted by DOE:

(1) The title of the clause shall be changed to read as follows: *Patent Rights to Nonprofit DOE Facility Operators*

(2) Add an “(A)” after “(1)” in paragraph (c)(1) and add subparagraphs (B) and (C) to paragraph (c)(1) as follows:

(B) If the subject invention occurred under activities funded by the naval nuclear propulsion or weapons related programs of*DOE,* then the provisions of this subparagraph (c)(1)(B) will apply in lieu of paragraphs (c)(2) and (3). In such cases the contractor agrees to assign the government the entire right, title, and interest thereto throughout the world in and to the subject invention except to the extent that rights are retained by the contractor through a greater rights determination or under paragraph (e), below. The contractor, or an employee-inventor, with authorization of the contractor, may submit a request for greater rights at the time the invention is disclosed or within a reasonable time thereafter. *DOE* will process such a request in accordance with procedures at 37 CFR 401.15. Each determination of greater rights will be subject to paragraphs (h)-(k) of this clause and such additional conditions, if any, deemed to be appropriate by the *Department of Energy.*

(C) At the time an invention is disclosed in accordance with (c)(1)(A) above, or within 90 days thereafter, the contractor will submit a written statement as to whether or not the invention occurred under a naval nuclear propulsion or weapons-related program of the *Department of Energy.* If this statement is not filed within this time, subparagraph (c)(1)(B) will apply in lieu of paragraphs (c)(2) and (3). The contractor statement will be deemed conclusive unless, within 60 days thereafter, the Contracting Officer disagrees in writing, in which case the determination of the Contracting Officer will be deemed conclusive unless the contractor files a claim under the Contract Disputes Act within 60 days after the Contracting Officer's determination. Pending resolution of the matter, the invention will be subject to subparagraph (c)(1)(B).

(3) Paragraph (k)(3) of the clause will be modified as prescribed at §401.5(g).

(c) As prescribed in §401.3, replace (b) of the basic clause with the following paragraphs (1) and (2):

(b) Allocation of principal rights. (1) The Contractor may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause, including (2) below, and 35 U.S.C. 203. With respect to any subject invention in which the Contractor retains title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(2) If the Contractor performs services at a Government owned and operated laboratory or at a Government owned and contractor operated laboratory directed by the Government to fulfill the Government's obligations under a Cooperative Research and Development Agreement (CRADA) authorized by 15 U.S.C. 3710a, the Government may require the Contractor to negotiate an agreement with the CRADA collaborating party or parties regarding the allocation of rights to any subject invention the Contractor makes, solely or jointly, under the CRADA. The agreement shall be negotiated prior to the Contractor undertaking the CRADA work or, with the permission of the Government, upon the identification of a subject invention. In the absence of such an agreement, the Contractor agrees to grant the collaborating party or parties an option for a license in its inventions of the same scope and terms set forth in the CRADA for inventions made by the Government.

[52 FR 8554, Mar. 18, 1987, as amended at 69 FR 17301, Apr. 2, 2004]

Procurement of Recovered Materials

a) In accordance with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, the Contractor shall procure items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition. The Contractor shall procure items designated in the EPA guidelines that contain the highest percentage of recovered materials practicable unless the Contractor determines that such items: (1) are not reasonably available in a reasonable period of time; (2) fail to meet reasonable performance standards, which shall be determined on the basis of the guidelines of the National Institute of Standards and Technology, if applicable to the item; or (3) are only available at an unreasonable price.

b) Paragraph (a) of this clause shall apply to items purchased under this contract where: (1) the Contractor purchases in excess of $10,000 of the item under this contract; or (2) during the preceding Federal fiscal year, the Contractor: (i) purchased any amount of the items for use under a contract that was funded with Federal appropriations and was with a Federal agency or a State agency or agency of a political subdivision of a State; and (ii) purchased a total of in excess of $10,000 of the item both under and outside that contract.

Source: form HUD-5370-C

§ 135.38 Section 3 Clause.

All section 3 covered contracts shall include the following clause (referred to as the section 3 clause):

A. The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

G. With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

ANNUAL SECTION 3 SUMMARY REPORTING REQUIREMENTS

FOR RECIPIENTS OF HUD COMMUNITY PLANNING & DEVELOPMENT FUNDING

*TECHNICAL ASSISTANCE ON FORM HUD-60002

Why HUD Enforces Section 3?

Each year the U.S. Department of Housing and Urban Development invests billions of federal dollars into distressed communities for projects designed to build and rehabilitate housing, improve roads, develop community centers, and otherwise assist families achieve the American Dream.

The Section 3 regulation recognizes that HUD funding typically results in projects/activities that generate new employment, training and contracting opportunities. These economic opportunities not only provide "bricks and mortar", but can also positively impact the lives of local residents who live in the neighborhoods being redeveloped.

Section 3 of the Housing and Urban Development Act of 1968 [12 U.S.C. 1701u and 24 CFR Part 135] is HUD's legislative directive for providing preference to low- and very low-income residents of the local community (regardless of race or gender), and the businesses that substantially employ these persons, for new employment, training, and contracting opportunities resulting from HUD-funded projects.

Further, as a condition of receiving HUD Community Planning and Development assistance, recipients certify that they will comply with the requirements of Section 3 annually pursuant to 24 CFR 570.607(b). Accordingly, the Department has the legal responsibility to monitor recipients for compliance and can impose penalties upon those that fail to meet these obligations.

Applicability of Section 3 to Community Planning & Development Assistance

The requirements of Section 3 apply to recipients of HUD Community Planning and Development funding exceeding **$200,000**.

Section 3 covered projects are those in which a *combined* (or aggregate) amount of covered funding exceeding $200,000, is invested into activities involving **housing construction, demolition, rehabilitation, or other public construction—i.e., roads, sewers, community centers, etc.** [Example: Section 3 applies to the combined investment of more than $200,000 into multiple single-family housing rehabilitation projects during a program year].

Contractors or subcontractors that receive contracts in excess of **$100,000** for Section 3 covered projects/activities are required to comply with the Section 3 regulations in the same manner as direct recipients.

If the recipient agency receives Section 3 covered funding and invests these funds into covered projects/activities, but no individual contract exceeds $100,000, <u>responsibility for complying with Section 3 only applies to the recipient</u>.

Accordingly, the recipient must attempt to reach the Section 3 minimum numerical goals found at 24 CFR Part 135.30 by: 1) Awarding 10 percent of the total dollar amount of all covered construction contracts to Section 3 businesses; and 2) Offering 30 percent of new employment opportunities to Section 3 businesses.

Section 3 Covered Community Planning and Development funding

- Community Development Block Grants (CDBG)
- Home Investment Partnership Assistance
- Housing Opportunities for Persons with Aids (HOPWA)
- Economic Development Initiative (EDI)
- Brownfield Economic Development Initiative (BEDI)
- Emergency Shelter Grants
- Homeless Assistance
- University Partnership Grants
- Neighborhood Stimulus Program (NSP)
- Certain Grants Awarded Under HUD Notices of Funding Availability (NOFAs)

*NOTE: The requirements of Section 3 only apply to the portion(s) of covered funding that were used for project/activities involving housing construction, rehabilitation, demolition, or other public construction.

Section 3 applies to the **entire** covered project or activity regardless of whether the activity was fully or partially funded with covered assistance.

Section 3 Covered Recipient Agencies

"Recipient" refers to any entity that receives Section 3 covered financial assistance directly from HUD or from another recipient and includes, but is not limited to any of the following:

- States; Units of Local Government; Native American Tribes; or other Public Bodies
- Public or Private Nonprofit Organizations
- Private Agencies or Institutions
- Mortgagors; Developers; Limited Dividend Sponsors; Builders; Property Managers; Community Housing Development Organizations
- Successors, assignees or transferees of any such entity listed above

- Recipients do **NOT** include any ultimate beneficiary under the HUD program that Section 3 applies and does **NOT** refer to contractors.

Triggering the Requirements of Section 3

Section 3 is triggered when the normal completion of construction and rehabilitation projects creates the need for **new** employment, contracting, or training opportunities.

The Section 3 regulations should not be construed to mean that recipients are required to hire Section 3 residents or award contracts to Section 3 businesses other than what is needed to complete covered projects/activities.

If the expenditure of covered funding does not result in new employment, contracting, or training opportunities, the requirements of Section 3 have not been triggered. However, each agency must sill submit Section 3 annual reports indicating this information.

INTERNAL REVENUE SERVICE
P. O. BOX 2508
CINCINNATI, OH 45201

DEPARTMENT OF THE TREASURY

Date: JAN 2 3 2007

WASHINGTON COUNTY COMMUNITY
DEVELOPMENT CORPORATION
313 MAIN ST ROOM A
WARWICK, RI 02879

Employer Identification Number:
32-0156535
DLN:
107023024
Contact Person:
TRACI D BERRY ID# 95129
Contact Telephone Number:
(877) 829-5500
Accounting Period Ending:
September 30
Public Charity Status:
170(b)(1)(A)(vi)
Form 990 Required:
Yes
Effective Date of Exemption:
August 17, 2005
Contribution Deductibility:
Yes
Advance Ruling Ending Date:
September 30, 2009

Dear Applicant:

We are pleased to inform you that upon review of your application for tax exempt status we have determined that you are exempt from Federal income tax under section 501(c)(3) of the Internal Revenue Code. Contributions to you are deductible under section 170 of the Code. You are also qualified to receive tax deductible bequests, devises, transfers or gifts under section 2055, 2106 or 2522 of the Code. Because this letter could help resolve any questions regarding your exempt status, you should keep it in your permanent records.

Organizations exempt under section 501(c)(3) of the Code are further classified as either public charities or private foundations. During your advance ruling period, you will be treated as a public charity. Your advance ruling period begins with the effective date of your exemption and ends with advance ruling ending date shown in the heading of the letter.

Shortly before the end of your advance ruling period, we will send you Form 8734, Support Schedule for Advance Ruling Period. You will have 90 days after the end of your advance ruling period to return the completed form. We will then notify you, in writing, about your public charity status.

Please see enclosed Information for Exempt Organizations Under Section 501(c)(3) for some helpful information about your responsibilities as an exempt organization.

If you distribute funds to other organizations, your records must show whether they are exempt under section 501(c)(3). In cases where the recipient organization is not exempt under section 501(c)(3), you must have evidence the funds will be used for section 501(c)(3) purposes.

Letter 1045 (DO/CG)

WASHINGTON COUNTY COMMUNITY

If you distribute funds to individuals, you should keep case histories showing the recipient's name and address; the purpose of the award; the manner of selection; and the relationship of the recipient to any of your officers, directors, trustees, members, or major contributors.

Sincerely,

Lois G. Lerner
Director, Exempt Organizations
Rulings and Agreements

Enclosures: Information for Organizations Exempt Under Section 501(c)(3)
Statute Extension

Letter 1045 (DO/CG)

WASHINGTON COUNTY COMMUNITY

INFORMATION FOR ORGANIZATIONS EXEMPT UNDER SECTION 501(c)(3)

WHERE TO GET FORMS AND HELP

Forms and instructions may be obtained by calling toll free 1-800-829-3676, through the Internet Web Site at www.irs.gov, and also at local tax assistance centers.

Additional information about any topic discussed below may be obtained through our customer service function by calling toll free 1-877-829-5500.

NOTIFY US ON THESE MATTERS

If you change your name, address, purposes, operations or sources of financial support, please inform our TE/GE EO Determinations Office at the following address: Internal Revenue Service, P.O. Box 2508, Cincinnati, Ohio 45201. If you amend your organizational document or by-laws, or dissolve, provide the EO Determinations Office with a copy of the amended documents. Please use your employer identification number on all returns you file and in all correspondence with the Internal Revenue Service.

FILING REQUIREMENTS

In your exemption letter we indicated whether you must file Form 990, Return of Organization Exempt From Income Tax. Form 990 (or Form 990-EZ) is filed with the Ogden Submission Processing Center, Ogden UT 84201-0027.

You are required to file a Form 990 only if your gross receipts are normally more than $25,000.

If your gross receipts are normally between $25,000 and $100,000, and your total assets are less than $250,000, you may file Form 990-EZ. If your gross receipts are over $100,000, or your total assets are over $250,000, you must file the complete Form 990. The Form 990 instructions show how to compute your "normal" receipts.

Form 990 Schedule A is required for both Form 990 and Form 990-EZ.

If a return is required, it must be filed by the 15th day of the fifth month after the end of your annual accounting period. There are penalties for failing to timely file a complete return. For additional information on penalties, see Form 990 instructions or call our toll free number.

If your receipts are below $25,000, and we send you a Form 990 Package, follow the instructions in the package on how to complete the limited return to advise us that you are not required to file.

If your exemption letter states that you are not required to file Form 990, you are exempt from these requirements.

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WASHINGTON COUNTY COMMUNITY

UNRELATED BUSINESS INCOME TAX RETURN

If you receive more than $1,000 annually in gross receipts from a regular trade or business you may be subject to Unrelated Business Income Tax and required to file Form 990-T, Exempt Organization Business Income Tax Return. There are several exceptions to this tax.

1. Income you receive from the performance of your exempt activity is not unrelated business income.

2. Income from fundraisers conducted by volunteer workers, or where donated merchandise is sold, is not unrelated business income.

3. Income from routine investments such as certificates of deposit, savings accounts, or stock dividends is usually not unrelated business income.

There are special rules for income derived from real estate or other investments purchased with borrowed funds. This income is called "debt financed" income. For additional information regarding unrelated business income tax see Publication 598, Tax on Unrelated Business Income of Exempt Organizations, or call our toll free number shown above.

PUBLIC INSPECTION OF APPLICATION AND INFORMATION RETURN

You are required to make your annual information return, Form 990 or Form 990-EZ, available for public inspection for three years after the later of the due date of the return, or the date the return is filed. You are also required to make available for public inspection your exemption application, any supporting documents, and your exemption letter. Copies of these documents are also required to be provided to any individual upon written or in person request without charge other than reasonable fees for copying and postage. You may fulfill this requirement by placing these documents on the Internet. Penalties may be imposed for failure to comply with these requirements. Additional information is available in Publication 557, Tax-Exempt Status for Your Organization, or you may call our toll free number shown above.

FUNDRAISING

Contributions to you are deductible only to the extent that they are gifts and no consideration is received in return. Depending on the circumstances, ticket purchases and similar payments in conjunction with fundraising events may not qualify as fully deductible contributions.

CONTRIBUTIONS OF $250 OR MORE

Donors must have written substantiation from the charity for any charitable contribution of $250 or more. Although it is the donor's responsibility to obtain written substantiation from the charity, you can assist donors by providing a written statement listing any cash contribution or describing any

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donated property.

This written statement must be provided at the time of the contribution. There is no prescribed format for the written statement. Letters, postcards and electronic (e-mail) or computer-generated forms are acceptable.

The donor is responsible for the valuation of donated property. However, your written statement must provide a sufficient description to support the donor's contribution. For additional information regarding donor substantiation, see Publication 1771, Charitable Contributions - Substantiation and Disclosure Requirements. For information about the valuation of donated property, see Publication 561, Determining the Value of Donated Property.

CONTRIBUTIONS OF MORE THAN $75 AND
CHARITY PROVIDES GOODS OR SERVICES

You must provide a written disclosure statement to donors who receive goods or services from you in exchange for contributions in excess of $75.

Contribution deductions are allowable to donors only to the extent their contributions exceed the value of the goods or services received in exchange. Ticket purchases and similar payments in conjunction with fundraising events may not necessarily qualify as fully deductible contributions, depending on the circumstances. If your organization conducts fundraising events such as benefit dinners, shows, membership drives, etc., where something of value is received, you are required to provide a written statement informing donors of the fair market value of the specific items or services you provided in exchange for contributions of more than $75.

You should provide the written disclosure statement in advance of any event, determine the fair market value of any benefit received, determine the amount of the contribution that is deductible, and state this information in your fundraising materials such as solicitations, tickets, and receipts. The amount of the contribution that is deductible is limited to the excess of any money (and the value of any property other than money) contributed by the donor less the value of goods or services provided by the charity. Your disclosure statement should be made, no later than, at the time payment is received. Subject to certain exceptions, your disclosure responsibility applies to any fundraising circumstances where each complete payment, including the contribution portion, exceeds $75. For additional information, see Publication 1771 and Publication 526, Charitable Contributions.

EXCESS BENEFIT TRANSACTIONS

Excess benefit transactions are governed by section 4958 of the Code. Excess benefit transactions involve situations where a section 501(c)(3) organization provides an unreasonable benefit to a person who is in a position to exercise substantial influence over the organization's affairs. If you believe there may be an excess benefit transaction involving your organization, you should report the transaction on Form 990 or 990-EZ. Additional information can be found in the instructions for Form 990 and Form 990-EZ, or you may call our

WASHINGTON COUNTY COMMUNITY

toll free number to obtain additional information on how to correct and report this transaction.

EMPLOYMENT TAXES

If you have employees, you are subject to income tax withholding and the social security taxes imposed under the Federal Insurance Contribution Act (FICA). You are required to withhold Federal income tax from your employee's wages and you are required to pay FICA on each employee who is paid more than $100 in wages during a calendar year. To know how much income tax to withhold, you should have a Form W-4, Employee's Withholding Allowance Certificate, on file for each employee. Organizations described in section 501(c)(3) of the Code are not required to pay Federal Unemployment Tax (FUTA).

Employment taxes are reported on Form 941, Employer's Quarterly Federal Tax Return. The requirements for withholding, depositing, reporting and paying employment taxes are explained in Circular E, Employer's Tax Guide, (Publication 15), and Employer's Supplemental Tax Guide, (Publication 15-A). These publications explain your tax responsibilities as an employer.

CHURCHES

Churches may employ both ministers and church workers. Employees of churches or church-controlled organizations are subject to income tax withholding, but may be exempt from FICA taxes. Churches are not required to pay FUTA tax. In addition, although ministers are generally common law employees, they are not treated as employees for employment tax purposes. These special employment tax rules for members of the clergy and religious workers are explained in Publication 517, Social Security and Other Information for Members of the Clergy and Religious Workers. Churches should also consult Publications 15 and 15-A. Publication 1828, Tax Guide for Churches and Religious Organizations, also discusses the various benefits and responsibilities of these organizations under Federal tax law.

PUBLIC CHARITY STATUS

Every organization that qualifies for tax-exemption as an organization described in section 501(c)(3) is a private foundation unless it falls into one of the categories specifically excluded from the definition of that term [referred to in section 509(a)(1), (2), (3), or (4)]. In effect, the definition divides these organizations into two classes, namely private foundations and public charities.

Public charities are generally those that either have broad public support or actively function in a supporting relationship to those organizations.

Public charities enjoy several advantages over private foundations. There are certain excise taxes that apply to private foundations but not to public charities. A private foundation must also annually file Form 990-PF, Return of Private Foundation, even if it had no revenue or expenses.

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Recipient Responsibilities Pursuant to Section 3

Each recipient (and their covered contractors, subcontractors, or subrecipients) are required to comply with the requirements of Section 3 for ***new*** employment, training, or contracting opportunities resulting from the expenditure of covered funding. This responsibility includes:

1. Implementing procedures to notify Section 3 residents and business concerns about training, employment, and contracting opportunities generated by Section 3 covered assistance;

2. Notifying potential contractors working on Section 3 covered projects of their responsibilities;

3. Incorporating the Section 3 Clause into all covered solicitations and contracts [see 24 CFR Part 135.38];

4. Facilitating the training and employment of Section 3 residents and the award of contracts to Section 3 business concerns;

5. Assisting and actively cooperating with the Department in making contractors and subcontractors comply;

6. Refraining from entering into contracts with contractors that are in violation of Section 3 regulations;

7. Documenting actions taken to comply with Section 3; and

8. Submitting Section 3 Annual Summary Reports (form HUD-60002) in accordance with 24 CFR Part 135.90.

In addition to the responsibilities described above, **State and County agencies or consortia** that distribute covered funds to units of local government, nonprofit organizations, or other subrecipients, must attempt to reach the minimum numerical goals set forth at 24 CFR Part 135.30, regardless of the number of subrecipients that receive covered funding. State or County agencies must also do the following:

1. Inform subrecipients about the requirements of Section 3;

2. Assist subrecipients and their contractors with achieving compliance;

3. Monitor subrecipients' performance with respect to meeting the requirements of Section 3; and

4. Report to HUD on the cumulative Section 3 activities taking place within their jurisdiction on an annual basis.

Section 3 Residents and Business Concerns

Section 3 Residents Are:

1. Residents of Public and Indian Housing; or

2. Individuals that reside in the metropolitan area or nonmetropolitan county in which the Section 3 covered assistance is expended and whose income do not exceed the local HUD income limits set forth for low- or very low-income households.

Section 3 Business Concerns Are One of the Following:

1. Businesses that are 51 percent or more owned by Section 3 residents;

2. Businesses whose permanent, full-time employees include persons, at least 30 percent of whom are currently Section 3 residents, or within three years of the date of first employment with the firm were Section 3 residents; or

3. Businesses that provide evidence of a commitment to subcontract in excess of 25 percent of the dollar amount of all subcontracts to be awarded to businesses that meet the qualifications described above.

In accordance with the regulation, residents and businesses concerns seeking Section 3 preference shall certify, or submit evidence to the recipient, contractor, subcontractor or subrecipient (if requested) verifying that they meet the definitions provided above.

Recipients can use their discretion for determining the type of verification that is required by prospective Section 3 residents and business concerns. Some examples include: proof of residency in a public housing authority; proof of federal subsidies for housing, food stamps, or unemployment benefits; and payroll data or other relevant business information.

Section 3 Summary Reports (Form HUD-60002)

Annually, each direct recipient of Community Planning and Development funding is required to submit form HUD-60002 to HUD's Economic Opportunity Division in Washington, DC. , preferably online from the following website: www.hud.gov/section3.

Due Date: **Form HUD-60002 is due at the same time as annual performance (e.g., CAPERS) reports**

The Section 3 Summary Report shall follow the same program, fiscal, or calendar year as the annual performance report and should correspond to the covered projects and activities that were administered during the reporting period.

NOTE: Section 3 reports must be submitted by all agencies that receive Community Planning and Development funding in excess of $200,000 whether the requirements were triggered or not.

Determining What Should Be Reported on Form HUD-60002

Section 3 Annual Summary Reports are intended to measure each recipient's efforts to comply with the statutory and regulatory requirements of Section 3 in its own operations **AND** those of its covered contractors, subcontractors, and subrecipients. Each submission of form HUD-60002 should indicate the following:

- The total dollar amount of HUD funding that was received by the recipient for covered projects/ activities during the specified reporting period.
- The total number of new employees that were hired by the recipient and/or its covered contractors, subcontractors, and subrecipients, as a result of performing or completing covered project/activities.
- The number of new employees that were hired by the recipient (or its covered contractors, subcontractors, and subrecipients), as a result of covered projects/activities, that met the definition of a Section 3 resident.
- The total number of man hours worked on covered projects (optional).
- The aggregate number of hours worked by Section 3 residents on covered projects (optional).
- The total number of Section 3 residents that participated in training opportunities that were made available by the recipient agency, its contractors, subrecipients, or other local community resource agencies.
- The total dollar amount of construction and/or non-construction contracts (or subcontracts) that were awarded with covered funding.
- The dollar amount of the recipient's construction or non-construction contracts (or subcontracts) that were awarded to Section 3 business concerns.
- Detailed narrative descriptions of the specific actions that were taken by the recipient (or its covered contractors, subcontractors, subrecipients, or others) to comply with the requirements of Section 3 and/or meet the minimum numerical goals for employment and contracting opportunities.

Section 3 Reporting and Compliance Determinations

Absent evidence to the contrary, the Department considers recipients of covered funding to be in compliance with Section 3 if they meet the minimum numerical goals set forth at 24 CFR Part 135.30. Specifically:

a. 30 percent of the aggregate number of new hires shall be Section 3 residents;

b. 10 percent of the total dollar amount of all covered construction contracts shall be awarded to Section 3 business concerns; and

c. 3 percent of the total dollar amount of all covered non-construction contracts shall be awarded to Section 3 business concerns.

Recipients that fail to meet the minimum numerical goals above bear the burden of demonstrating why it was not possible to do so. Such justifications should describe the efforts that were taken, barriers encountered, and other relevant information that will enable the Department to make a compliance determination.

Recipients that submit Section 3 reports containing **all zeros**, without a sufficient explanation to justify their submission, are in **noncompliance** with the requirements of Section 3.

Failure to comply with the requirements of Section 3 may result in sanctions, including: debarment, suspension, or limited denial of participation in HUD programs pursuant to 24 CFR Part 24.

Recipients that are subject to annual A-133 Audits may also receive an audit finding for failure to submit form HUD-60002 to HUD.

Important Notes for Submitting Form HUD-60002

- Recipients must submit a separate form HUD-60002 for each type of covered funding (*e.g.,* separate reports must be submitted for CDBG and HOME funding).

- Use the online Section 3 Summary Reporting System at: www.hud.gov/section3 to ensure that form HUD- 60002 is received by the Economic Opportunity Division in HUD Headquarters in a timely manner.

- The "reporting period" option in the online Section 3 Summary Reporting System (box #7) lists quarters but the Section 3 reporting is an annual requirement. Accordingly, recipients should select **Quarter 4** to document the total amount of covered activities/projects that were completed during the entire reporting period.

- If the recipient (or its covered contractors, subcontractors and subrecipients) did not hire any new employees during the reporting period, and/or if no covered construction or non-construction contracts were awarded, the recipient must indicate this in Part III of form HUD-60002 and certify that this information is true and accurate by penalty of law.

0705-1168

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources

1/3

Site Evaluation Form
Part A - Soil Profile Description Application Number _____

Property Owner: WASHINGTON COUNTY COMMUNITY DEVELOPMENT
Property Location: 4130 OLD POST ROAD, AP 13 LOT 43, CHARLESTOWN
Date of Test Hole: SEPTEMBER 8, 2015
Soil Evaluator: DAVID WATSON License Number: D4052
Weather: SUNNY 85°F Shaded: Yes ☑ No ☐ Time: 10:00 AM

TH 4 Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category
Ap	11	a	s	10YR3/3	—	—	—	—	SiL	1 m sbk	vfr	5
Bw1	19	c	s	10YR4/6	—	—	—	—	SiL	1 m sbk	vfr	5
Bw2	33	c	w	10YR5/4	10YR4/6 2.5Y5/3	c	3	d	SiL	1 sbk	vfr	5
C	60	c	s	2.5Y5/3	10YR4/6	f	3	p	SiL	0 m	vfr	7
2C	96+	—	—	2.5Y5/3	—	—	—	—	vcb SL	0 m	vfr	6

TH 3 Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category
Ap	11	a	s	10YR3/3	—	—	—	—	SiL	1 m sbk	vfr	5
Bw1	21	c	s	10YR4/6	—	—	—	—	SiL	1 m sbk	vfr	5
Bw2	26	c	s	10YR5/4	—	—	—	—	SiL	1 sbk	vfr	5
C	62	a	w	2.5Y5/3	10YR4/6 2.5Y5/2	m	1	p/d	SiL	0 m	vfr	6
2C1	77	c	s	2.5Y5/3	7.5YR4/6	c	3	p	vcb LS	0 sg	l	1
2C2	102+	—	—	2.5Y5/3	—	—	—	—	vcb LS	0 sg	vfr	1

Environmental Management
SEP 1 1 2015
Office of Water Resources

Soil Class: "C"
Depth to Groundwater Seepage: NOT REACHED
Estimated Seasonal High Water Table: 4: 96"+; 3: 102"+
Total Depth of each Test Hole: 4: 96"; 3: 102"
Depth to Impervious or Limiting Layer: NOT REACHED
Comments: NONE

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources

2/3

Site Evaluation Form
Part A - Soil Profile Description Application Number _____

Property Owner: WASHINGTON COUNTY COMMUNITY DEVELOPMENT
Property Location: 4130 OLD POST ROAD, AP 13 LOT 93, CHARLESTOWN
Date of Test Hole: SEPTEMBER 8, 2015
Soil Evaluator: DAVID KALEN License Number: 04052
Weather: SUNNY 85° +/- Shaded: Yes ☑ No ☐ Time: 11:00

TH 2A Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category
Ap	11	a	s	10YR 3/3	—	—	—	—	SL	1 m sbk	vfr	3
Bw	28	c	s	10YR 4/6	—	—	—	—	SiL	1 c sbk	vfr	5
C1	45	a	s	2.5Y 5/3	7.5YR 4/6	m	2	P	SL/LS	0 m	vfr	6
C2	70	c	s	2.5Y 5/3	—	—	—	—	LS	0 m	vfr	1
2C	110+	—	—	2.5Y 5/3	—	—	—	—	vcb LS	0 sg	l	1

TH 2B Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category
Ap	11	a	s	10YR 3/3	—	—	—	—	SL	1 m sbk	vfr	3
Bw	24	c	s	10YR 4/6	—	—	—	—	SL	1 m sbk	vfr	3
C	60	a	s	2.5Y 5/3	7.5YR 4/6	f	3	P	LS	0 m	vfr	1
2C1	75	c	s	10YR 4/6	—	—	—	—	vcb coS	0 sg	l	1
2C2	100+	—	—	10YR 4/6	—	—	—	—	Vcb LS	0 m	vfr	1

Environmental Management
SEP 11 2015
Office of Water Resources

Soil Class: "C" Total Depth of each Test Hole: 2A: 110"; 2B: 100"
Depth to Groundwater Seepage: NOT REACHED Depth to Impervious or Limiting Layer: NOT REACHED
Estimated Seasonal High Water Table: 2A: 110"+; 2B: 100"+ Comments: NONE

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources

3/3

Site Evaluation Form
Part A - Soil Profile Description Application Number _____

Property Owner: WASHINGTON COUNTY COMMUNITY DEVELOPMENT
Property Location: 4130 OLD POST ROAD, AP13 LOT 43, CHARLESTOWN
Date of Test Hole: SEPTEMBER 8, 2015
Soil Evaluator: DAVID KALEN License Number: D4052
Weather: SUNNY 85°F+/- Shaded: Yes ☑ No ☐ Time: 11:45

TH 5 Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category
Ap	8	a	s	10YR3/3	—	—	—	—	SL	1 m sbk	vfr	3
Bw1	20	c	s	10YR4/6	—	—	—	—	SiL	1 c sbk	vfr	5
Bw2	34	c	s	10YR4/6	—	—	—	—	SiL	1 c sbk	vfr	5
C	60	c	s	2.5Y5/3	7.5YR4/6	C	3	P	SiL	0 m	fr	7
2C	100+	—	—	2.5Y5/3	—	—	—	—	SL	0 m	vfr	6

TH ___ Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category

Environmental Management
SEP 11 2015
Office of Water Resources

Soil Class: "C" Total Depth of eachTest Hole: 5' 10"
Depth to Groundwater Seepage: NOT REACHED Depth to Impervious or Limiting Layer: NOT REACHED
Estimated Seasonal High Water Table: 5' >100" Comments: NONE

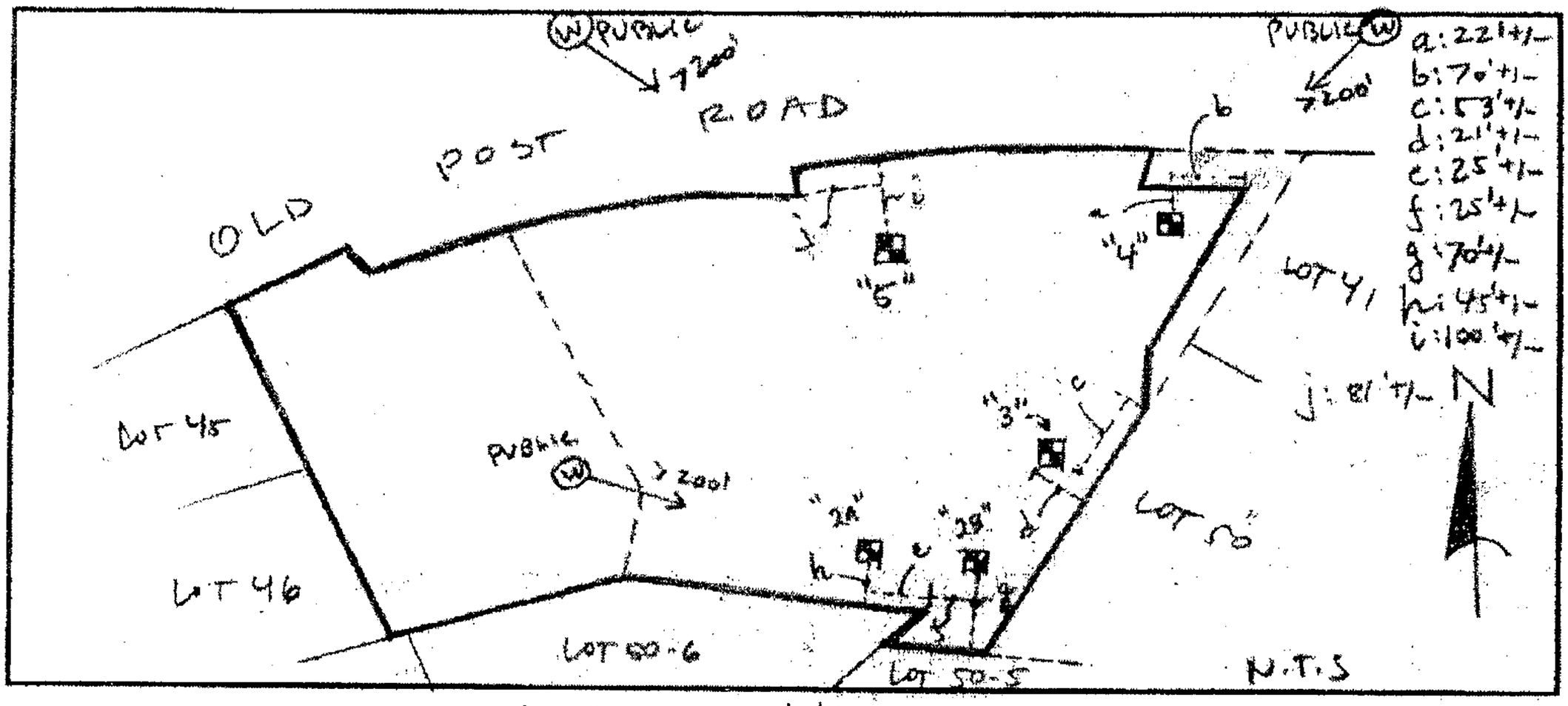
Part B

Site Evaluation - to be completed by Class II or III Designer or Soil Evaluator

Please use the area below to locate:

1. Test holes
2. Approximate direction of due north
3. Offsets from test holes to fixed points such as street, utility pole, or other permanent, marked object

Key:
- Approximate location of test holes
- x% Estimated gradient and direction of slope
- N Approximate direction of due north



1. Relief and Slope: MICROREIEF: 10' ; SLOPE: 1% +/-
2. Presence of any watercourse, wetlands or surface water bodies, within 200 feet of test holes: YES☐ NO☑ If yes, locate on above sketch.
3. Presence of existing or proposed private drinking water wells within 200 feet of test holes: YES☑ NO☐ If yes, locate on above sketch.
4. Public drinking water wells within 500 feet of test holes: YES☑ NO☐ If yes, locate on above sketch.
5. Is site within the watershed of a public drinking water reservoir ~~or other critical area defined in SD 19.002~~? YES☐ NO☑
6. Has soil been excavated from or fill deposited on site? YES☐ NO☑ If yes, locate on above sketch.
7. Site's potential for flooding or ponding: NONE☑ SLIGHT☐ MODERATE☐ SEVERE☐
8. Landscape position: BACKSLOPE
9. Vegetation: UPLAND FOREST + UNDERSTORY
10. Indicate approximate location of property lines and roadways.
11. Additional comments, site constraints or additional information regarding site: NONE. WELL INFO FROM ENGINEERS PLANS

Certification

The undersigned hereby certifies that all information on this application and accompanying forms, submittals and sketches are true and accurate and that I have been authorized by the owner(s) to conduct these necessary field investigations and submit this request.

Part A prepared by: [signature] D4052
Signature License #

Part B prepared by: [signature] D4052
Signature License #

FOR OFFICE USE ONLY

Decision: Approved (SD 26.00(f)(1) ☒ Not in compliance, or more infomration required (SD 26.00(f)(2) Disclaimed (SD 27.00(f)(3) ☐

Comments:

[signature] 10-9-15
Signature Authorized Agent Date

revised 5/8/01

1/2

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources

Site Evaluation Form
Part A - Soil Profile Description

Application Number 0705-1168

Property Owner: SUBURBAN CLEANERS
Property Location: 4130 OLD POST RD, A MAP 13, LOT -43
Date of Test Hole: 7-27-07
Soil Evaluator: JOSEPH W. FRISELLA License Number: D4027
Weather: PARTLY CLOUDY - 80° ± Shaded: Yes ☐ No ☑ Time: 10 AM

TH A Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category
O_i	0-3"	a	s	10YR 4/3	—		—		friabrick		l	—
HTM 2Bw1	3-8"	a	s	10YR 5/4	—		—		sl	slf	vfr	3
ILL HTM 2C1	3"-29"	a	s	10YR 5/4					gr, cbl sl	stlss sgr	l	1
Bw2b	29"-96"	a	s	2.5Y 6/4	DEP 5Y 6/1 / 10YR 5/6 CON	m / m	f-l / f-l	p / d	fsl	stlss mass	vfr	7
2C2	96"-168"	—	—	10YR 5/3	—		—		gr, cbl ls	stlss sgr	l	1
15' WHITE PEPF PVC PIPE, SLEEVED 12" ABV. GRD IN BOTH TEST PITS A & B												

GRADE

TH B Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category
O_i	0-3"	a	s	10YR 4/3	—		—		fribrick		l	—
HTM 2C1 FILL	3"-24"	a	s	10YR 5/4	—		—		grz ls	stlss sgr	vfr	3
HTM 2C2 FILL	24-43	a	s	10YR 6/4	DEP 5Y 6/1 / 10YR 5/6 CON	m / m	f-l / f-l	p / d	some gr sl	stlss mass	fr	3
Ap_b	43"-45"	a	s	10YR 4/3	—		—		sl	gr	vfr	3
Bw_1b	45"-58"	a	s	10YR 5/4	—		—		fsl	stlss mass	vfr	7
Bw_2b	58"-96"	a	s	10YR 6/4	same				fsl	mass	fr	3
3C	96"-168"	—	—	10YR 5/3	—		—		gr ls	stlss sgr	l	1

Soil Class: MmA MERRIMAC
Depth to Groundwater Seepage: NONE
Estimated Seasonal High Water Table: A & B @ 168", C @ 150"
Total Depth of each Test Hole: "A" & "B" @ 168"
Depth to Impervious or Limiting Layer: NONE
Comments: THE REDOX FEATURES IN T. PIT "A" Bw_2b & T. P "B" 2C2 HTM FILL & T. P "C" Bw_1b ARE A RESULT OF HANGING WATER AND ARE NOT AN INDICATION OF A WATER TABLE.

2/2

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources

Site Evaluation Form
Part A - Soil Profile Description

Application Number 0705-1168

Property Owner: SUBURBAN CLEANERS
Property Location: 430 OLD POST RD., A MAP 13, LOT-43
Date of Test Hole: 7-27-07
Soil Evaluator: JOSEPH W. FRISELLA License Number:
Weather: PART CLOUDY 85°± Shaded: Yes☐ No☐ Time: 12 PM

TH C Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category
A	0-5	a	s	10YR 4/3	—	—			sl	2 gr	vfr	3
HTM 2Bw FILL	5-12	a	s	10YR 5/4	—	—			sl	1 sbl	fr	3
Apb	12-16	a	s	10YR 4/3	— DEP	—			sl	1 gr	vfr	3
Bwb	16-24"	a	s	2.5Y 6/3	5Y 6/1	c	f-m	d	fsl	sbk	fr	7
					CON	m	f-l	p		mass		
2C	24-150"	—	—	10YR 5/3	—	—			gr s	sbk sgr	l	1
13' WHITE PVC PERF PIPE, SLEEVED, 3'± ABV. GRD												

TH ____ Horizon	Depth	Horizon Boundaries Dist	Horizon Boundaries Topo	Soil Colors Matrix	Soil Colors Re-Dox Features	Re-Dox Description Ab.	Re-Dox Description S.	Re-Dox Description Con.	Texture	Structure	Consistence	Soil Category

AUG 6 2007

Soil Class: MmA MERRIMAC
Total Depth of each Test Hole: C @ 13'
Depth to Groundwater Seepage: NONE
Depth to Impervious or Limiting Layer: NONE
Estimated Seasonal High Water Table: "A & B" @ 168", "C" @ 150
Comments: THE REDOX FEATURES @ Bwb INDICATE HANGING WATER, NOT A WATER TABLE

Where Are Reports Submitted

Form HUD-60002 must be submitted to HUD's Economic Opportunity Division, in Washington, DC. Recipients are strongly encouraged to submit form HUD-60002 online at: www.hud.gov/section3.

Recipients can also download a hard copy of form-HUD 60002 from the website listed above. Hard copies shall be submitted via fax or mail to:

U.S. Department of Housing and Urban Development
Attn: Economic Opportunity Division
451 Seventh Street, SW
Room 5235
Washington, DC 20410
202-708-1286 (fax)

Additional Section 3 Guidance and Technical Assistance

The Economic Opportunity Division is committed to providing recipient's guidance and technical assistance for compliance with the requirements of Section 3.

For additional information, please visit the Section 3 website at: www.hud.gov/section3. This webpage provides the following tools and information:

- Section 3 Statute—12 U.S.C. 1701u
- Section 3 Regulation—24 CFR Part 135
- Frequently Asked Questions
- Section 3 Model Programs
- Guidance on Section 3 and Economic Stimulus Funding
- Guidance on Section 3 and the Neighborhood Stimulus Program (NSP)
- Sample Section 3 Certification Forms (residents and business concerns)
- Link to HUD's Local Income Eligibility Calculator
- Link to Section 3 Annual Reporting System(form HUD-60002)
- Downloadable Forms
- Contact Information for Economic Opportunity Division staff
- Email inquiries on Section 3 can be sent to section3@hud.gov

CERTIFICATION OF BIDDER REGARDING SECTION 3 AND SEGREGATED FACILITIES

_____ _____

Name of Prime Contractor Project Name & Number

The undersigned hereby certifies that:

1. Section 3 provisions are included in the Contract.

2. A written Section 3 plan was prepared and submitted as part of the bid proceedings (if bid equals or exceeds $100,000).

3. No segregated facilities will be maintained.

_____

Name & Title of Signer (Print or Type):

_____

Signature Date

SECTION 3 PLAN CERTIFICATION

_____ agrees to implement the following specific affirmative action
Name of Contractor
directed at increasing the utilization of lowest income residents and businesses with in the City/Town of_____
_____.

A. To ascertain from the locality's CDBG program official the exact boundaries of the Section 3 covered project area and were advantageous, seek the assistance of local officials in preparing and implementing the affirmative action plan.

B. To attempt to recruit from within the city /town the necessary number of lower income residents through: Local advertising media, sign placed at the proposed site for the project, and community organizations and public or private institutions operating within or serving the project area such as Service Employment and Redevelopment (SER), Opportunities Industrialization Center (OIC), Urban League, Concentrated Employment Program, Hometown Plan, or the U.S. Employment Service.

C. To maintain a list of all lower income residents who have applied either on their own or on referral from any source, and to employ such persons, if otherwise eligible and if a vacancy exists.

D.* To insert this Section 3 plan in all bid documents, and to require all bidders and subcontractors to submit a Section 3 affirmative action plan including utilization goals and the specific steps planned to accomplish these goals.

E.* To insure that subcontracts which are typically let on a negotiated rather than bid basis in areas other than Section 3 covered project areas, are also let on a negotiated basis, whenever feasible, when let in a Section 3 covered project area.

F. To formally contact unions, subcontractors and trade associations to secure their cooperation for this program.

G. To insure that all appropriated project area business concerns are notified of pending subcontractual opportunities.

H. To maintain records, including copies of correspondence, memoranda, etc., which document that all the above affirmative action steps have been taken.

I. To appoint or recruit an executive official of the company or agency as Equal Opportunity Officer to coordinate the implementation of the Section 3 Plan.

As officers and representatives of _____ we, the undersigned, have read and
(Name of Contractor)
fully agree to this Affirmative Action Plan, and become a party to the full implementation of this program.

Signature	Title	Date
Signature	Title	Date

Section 3 Summary Report

Economic Opportunities for
Low – and Very Low-Income Persons

U.S. Department of Housing
and Urban Development
Office of Fair Housing
And Equal Opportunity

OMB Approval No: 2529-0043
(exp. 11/30/2010)

HUD Field Office:

Section back of page for Public Reporting Burden statement

1. Recipient Name & Address: (street, city, state, zip)	2. Federal Identification: (grant no.)	3. Total Amount of Award:
	4. Contact Person	5. Phone: (Include area code)
	6. Length of Grant:	7. Reporting Period:
8. Date Report Submitted:	9. Program Code: (Use separate sheet for each program code)	10. Program Name:

Part I: Employment and Training (** Columns B, C and F are mandatory fields. Include New Hires in E &F)

A Job Category	B Number of New Hires	C Number of New Hires that are Sec. 3 Residents	D % of Aggregate Number of Staff Hours of New Hires that are Sec. 3 Residents	E % of Total Staff Hours for Section 3 Employees and Trainees	F Number of Section 3 Trainees
Professionals					
Technicians					
Office/Clerical					
Construction by Trade (List) Trade					
Trade					
Trade					
Trade					
Trade					
Other (List)					
Total					

* Program Codes
1 = Flexible Subsidy
2 = Section 202/811
3 = Public/Indian Housing
A = Development,
B = Operation
C = Modernization
4 = Homeless Assistance
5 = HOME
6 = HOME State Administered
7 = CDBG Entitlement
8 = CDBG State Administered
9 = Other CD Programs
10 = Other Housing Programs

form HUD 60002 (6/2001)
Ref 24 CFR 135

Department of Transportation
Division of Highway and Bridge Maintenance
3600 Airport Avenue
Warwick, RI 02886

2/15/2016

Washington County Develop. Corp.
Mr. Gerard Bertrand
400 Tower Hill Road
North Kingstown, RI 02852

Subject: Permit: 151030-A
4130 Old Post Road, Charlestown

Dear Mr. Gerard Bertrand,

In reference to Permit Number 151030-A, for the development in Charlestown, the application has been reviewed and found to be acceptable. The Physical Alteration Permit will be issued pending the bond requirement of **$16,179.85** for the proposed work within the State right-of-way.

If you have any questions, please contact my office at (401) 734-4800.

Sincerely,

Joseph A. Bucci, P.E.
Acting Administrator
Highway and Bridge Maintenance Operations

cc: William Dowdell, P.E., file

Department of Transportation
Two Capitol Hill
Providence, RI 02903

Office 401-222-2450
Fax 401-222-3905

MEMO:

To: Joseph Bucci, P.E.
Acting Administrator
Highway & Bridge Maintenance

Date: February 10, 2016

From: Vincent J. Palumbo, P.E.
Managing Engineer
Road Engineering

Subject: **PHYSICAL ALTERATION PERMIT NO. 151030-A APPROVAL**
4130 Old Post Road, AP 13 Lot 43 - Charlestown, RI.
Proposed Multi-Unit Dwellings - Proposed Driveway Openings

Applicant: Washington County Community Development Corporation
Property Owner: Washington County Community Development Corporation
Engineer: Dowdell Engineering, Inc., c/o William D. Dowdell, P.E. No. 4217

We have completed review of the Physical Alteration Permit Application No. 151030-A, received in this office on October 30, 2015. Following receipt of revised plans and deliverables on February 3, 2016, we have found it acceptable and recommend approval

Attached are the following:

1. Original Physical Alteration Permit Application form, signed and dated 10-06-15.
2. Town of Charlestown acknowledgement letter, dated October 23, 2015 by the Building/Zoning Official.
3. Landscape Interoffice Memorandum, dated November 20, 2015, stating "do not have any comments".
4. R.I. Historical Preservation & Heritage Commission letter, dated 11/12/15, stating "...this project will have no effect on any cultural resources..."
5. Revised Cost Estimate dated 12/17/15 and revised 1/29/16 in the amount of $16,179.85 for work within the State right-of-way.
6. Stormwater Report/Drainage Computations, dated and sealed 12/18/15, endorsed by William D. Dowdell, P.E. No. 4217.

7. Five (5) copies of the revised plans prepared by Dowdell Engineering, Inc., dated October 28, 2015 and sealed 2/01/16 by William D. Dowdell, P.E. No. 4217, titled "RIDOT PAP Plan, Churchwoods, Assessor's Map 13 Lot 43, Prepared For Washington County Community Development Corp., Situated in the Town of Charlestown, Rhode Island" and marked "Revised Submission, Engineering Received February 3, 2016".

Our office has reviewed the attached material for PAPA 151030-A and finds it acceptable. Based on our recommendation, the Chief Engineer has **approved** the attached Permit Application, and a permit may be issued.

Should you have any questions regarding the subject application, please contact Ferdinand Ihenacho, P.E., at 222-2023 extension 4467.

Approved:

David W. Fish

David Fish, P.E.
Acting Chief Engineer

/FCI
Attachments
cc: Capalbo, D'Amico, Fish, Ihenacho, Palumbo, (all w/o attachments); PAPA 151030-A File, (w/ attachments).

Part II: Contracts Awarded

1. Construction Contracts:

A. Total dollar amount of all contracts awarded on the project	$
B. Total dollar amount of contracts awarded to Section 3 businesses	$
C. Percentage of the total dollar amount that was awarded to Section 3 businesses	%
D. Total number of Section 3 businesses receiving contracts	

2. Non-Construction Contracts:

A. Total dollar amount all non-construction contracts awarded on the project/activity	$
B. Total dollar amount of non-construction contracts awarded to Section 3 businesses	$
C. Percentage of the total dollar amount that was awarded to Section 3 businesses	%
D. Total number of Section 3 businesses receiving non-construction contracts	

Part III: Summary

Indicate the efforts made to direct the employment and other economic opportunities generated by HUD financial assistance for housing and community development programs, to the greatest extent feasible, toward low-and very low-income persons, particularly those who are recipients of government assistance for housing. (Check all that apply.)

_____ Attempted to recruit low-income residents through: local advertising media, signs prominently displayed at the project site, contracts with the community organizations and public or private agencies operating within the metropolitan area (or nonmetropolitan county) in which the Section 3 covered program or project is located, or similar methods.

_____ Participated in a HUD program or other program which promotes the training or employment of Section 3 residents.

_____ Participated in a HUD program or other program which promotes the award of contracts to business concerns which meet the definition of Section 3 business concerns.

_____ Coordinated with Youthbuild Programs administered in the metropolitan area in which the Section 3 covered project is located.

_____ Other; describe below.

Public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This agency may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB number.

Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u, mandates that the Department ensures that employment and other economic opportunities generated by its housing and community development assistance programs are directed toward low- and very-low income persons, particularly those who are recipients of government assistance housing. The regulations are found at 24 CFR Part 135. The information will be used by the Department to monitor program recipients' compliance with Section 3, to assess the results of the Department's efforts to meet the statutory objectives of Section 3, to prepare reports to Congress, and by recipients as self-monitoring tool. The data is entered into a database and will be analyzed and distributed. The collection of information involves recipients receiving Federal financial assistance for housing and community development programs covered by Section 3. The information will be collected annually to assist HUD in meeting its reporting requirements under Section 808(e)(6) of the Fair Housing Act and Section 916 of the HCDA of 1992. An assurance of confidentiality is not applicable to this form. The Privacy Act of 1974 and OMB Circular A-108 are not applicable. The reporting requirements do not contain sensitive questions. Data is cumulative; personal identifying information is not included.

Form HUD-60002, **Section 3 Summary Report, Economic Opportunities for Low- and Very Low-Income Persons.**

Instructions: This form is to be used to report annual accomplishments regarding employment and other economic opportunities provided to low- and very low-income persons under Section 3 of the Housing and Urban Development Act of 1968. The Section 3 regulations apply to any ***public and Indian housing programs*** that receive: (1) development assistance pursuant to Section 5 of the U.S. Housing Act of 1937; (2) operating assistance pursuant to Section 9 of the U.S. Housing Act of 1937; or (3) modernization grants pursuant to Section 14 of the U.S. Housing Act of 1937 and to **recipients of housing and community development assistance in excess of $200,000** expended for: (1) housing rehabilitation (including reduction and abatement of lead-based paint hazards); (2) housing construction; or (3) other public construction projects; and to ***contracts and subcontracts in excess of $100,000*** awarded in connection with the Section-3-covered activity.

Form HUD-60002 has three parts, which are to be completed for all programs covered by Section 3. Part I relates to ***employment and training***. The recipient has the option to determine numerical employment/training goals either on the basis of the number of hours worked by new hires (columns B, D, E and F). Part II of the form relates to ***contracting***, and Part III summarizes recipients' ***efforts*** to comply with Section 3.

Recipients or contractors subject to Section 3 requirements must maintain appropriate documentation to establish that HUD financial assistance for housing and community development programs were directed toward low- and very low-income persons.* A recipient of Section 3 covered assistance shall submit one copy of this report to HUD Headquarters, Office of Fair Housing and Equal Opportunity. Where the program providing assistance requires an annual performance report, this Section 3 report is to be submitted at the same time the program performance report is submitted. Where an annual performance report is not required, this Section 3 report is to be submitted by January 10 and, if the project ends before December 31, within 10 days of project completion. ***Only Prime Recipients are required to report to HUD. The report must include accomplishments of all recipients and their Section 3 covered contractors and subcontractors.***

HUD Field Office: Enter the Field Office name .

1. Recipient: Enter the name and address of the recipient submitting this report.
2. Federal Identification: Enter the number that appears on the award form (with dashes). The award may be a grant, cooperative agreement or contract.
3. Dollar Amount of Award: Enter the dollar amount, rounded to the nearest dollar, received by the recipient.

4 & 5. Contact Person/Phone: Enter the name and telephone number of the person with knowledge of the award and the recipient's implementation of Section 3.

6. Reporting Period: Indicate the time period (months and year) this report covers.
7. Date Report Submitted: Enter the appropriate date.
8. Program Code: Enter the appropriate program code as listed at the bottom of the page.
9. Program Name: Enter the name of HUD Program corresponding with the "Program Code" in number 8.

Part I: Employment and Training Opportunities

Column A: Contains various job categories. Professionals are defined as people who have special knowledge of an occupation (i.e. supervisors, architects, surveyors, planners, and computer programmers). For construction positions, list each trade and provide data in columns B through F for each trade where persons were employed. The category of "Other" includes occupations such as service workers.

Column B: (Mandatory Field) Enter the number of new hires for each category of workers identified in **Column A** in connection with this award. New hire refers to a person who is not on the contractor's or recipient's payroll for employment at the time of selection for the Section 3 covered award or at the time of receipt of Section 3 covered assistance.

Column C: (Mandatory Field) Enter the number of Section 3 new hires for each category of workers identified in **Column A** in connection with this award. Section 3 new hire refers to a Section 3 resident who is not on the contractor's or recipient's payroll for employment at the time of selection for the Section 3 covered award or at the time of receipt of Section 3 covered assistance.

Column D: Enter the percentage of all the staff hours of new hires (Section 3 residents) in connection with this award.

Column E: Enter the percentage of the total staff hours worked for Section 3 employees and trainees (including new hires) connected with this award. Include staff hours for part-time and full-time positions.

Column F: (Mandatory Field) Enter the number of Section 3 residents that were trained in connection with this award.

Part II: Contract Opportunities

Block 1: Construction Contracts

Item A: Enter the total dollar amount of all contracts awarded on the project/program.

Item B: Enter the total dollar amount of contracts connected with this project/program that were awarded to Section 3 businesses.

Item C: Enter the percentage of the total dollar amount of contracts connected with this project/program awarded to Section 3 businesses.

Item D: Enter the number of Section 3 businesses receiving awards.

Block 2: Non-Construction Contracts

Item A: Enter the total dollar amount of all contracts awarded on the project/program.

Item B: Enter the total dollar amount of contracts connected with this project awarded to Section 3 businesses.

Item C: Enter the percentage of the total dollar amount of contracts connected with this project/program awarded to Section 3 businesses.

Item D: Enter the number of Section 3 businesses receiving awards.

Part III: Summary of Efforts – Self -explanatory

Submit one (1) copy of this report to the HUD Headquarters Office of Fair Housing and Equal Opportunity, at the same time the performance report is submitted to the program office. The Section 3 report is submitted by January 10. Include only contracts executed during the period specified in item 8. PHAs/IHAs are to report all contracts/subcontracts.

* The terms "low-income persons" and very low-income persons" have the same meanings given the terms in section 3 (b) (2) of the United States Housing Act of 1937. ***Low-income persons*** mean families (including single persons) whose incomes do not exceed 80 percent of the median income for the area, as determined by the Secretary, with adjustments for smaller and larger families, except that The Secretary may establish income ceilings higher or lower than 80 percent of the median for the area on the basis of the Secretary's findings such that variations are necessary because of prevailing levels of construction costs or unusually high- or low-income families. ***Very low-income persons*** mean low-income families (including single persons) whose incomes do not exceed 50 percent of the median family income area, as determined by the Secretary with adjustments or smaller and larger families, except that the Secretary may establish income ceilings higher or lower than 50 percent of the median for the area on the basis of the Secretary's findings that such variations are necessary because of unusually high or low family incomes.

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section l(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part

of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section l(b)(2)(B) of the Davis-bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant ',to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by

the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than $5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable where the amount of the prime contract exceeds $100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in sub paragraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable where the amount of the prime contract exceeds $100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

Silva Environmental & Associates, Inc.
Environmental, Asbestos / Lead Consultants

April 14, 2016

Washington Community Development Corporation(WCDC)
Mr. Gerry Bertrand
400 Tower Hill Road
North Kingstown, RI 02852-5619

Re: Vacant structure selected for demolition located at 4130 Old Post Road, Charlestown RI.

Dear Mr. Bertrand:

Please be advised that the vacant dwelling, owned by WCDC located at 400 Tower Hill Road, Charlestown RI, schedule for total demolition, was inspected on March 21, 2016 by Silva Environmental & Associates, Inc., an accredited inspector for asbestos.

Please find enclosed the bulk samples results collected on March 21, 2016 for asbestos identification.

OP - 001 – Roof Shingle Right side – **Negative**
OP - 002 – Roof Shingle Left Side – **Negative**
OP - 003 - Black paper - **Negative**

No other visual suspect materials were found in the property mentioned above, however if in the course of the demolition any suspect material is found, WORK SHALL STOP IMMEDIATELY, and the suspect material found, should be assumed to contain asbestos until sampling and laboratory analysis proves otherwise.

This letter serves as notification that a demolition permit can be issued by the Town of Charlestown.

Thank you for the opportunity to serve your needs. If you have any questions regarding this letter, please call me at (401) 732-3976 or my cell (401) 413-1142.

Sincerely
Silva Environmental & Associates, Inc.

M. Frank Silva, President
Industrial Hygienist
Rhode Island State Certifications:
AAC-085PD, AAC-085IS, AAC-085MP
Massachusetts Certifications: AI001131, AP000880

45 Transit Street • Warwick, Rhode Island 02889 • (401) 732-3976

ProScience Analytical Services, Inc

M. Frank Silva
Silva Environmental & Associates, Inc.
45 Transit St.
Warwick, RI 02889

March 23, 2016

Dear M. Frank Silva,

The enclosed analytical results have been obtained by using the EPA/600/R-93/116 method. The "Visual Estimate" quantitative method is generally used for determining the percentage of asbestos and other components of the sample. "The Point Counting" method may also be used upon client request or at the analyst discretion. The Point Count method is usually recommended when the sample contains less than 10% asbestos by Visual estimate. Asbestos content less than 1% is recorded on the report as TR (trace).

The Quality Control data related to the samples analyzed is available upon client's written request. ProScience Analytical Services Inc., assumes no responsibility for potential sample contamination that may have occurred during the sample collection process or erroneous data provided by the client.

The enclosed results may not be used under any circumstances as product endorsement by any US government agency including NIST/NVLAP.

All Laboratory records are retained for at least three years unless otherwise directed in writing by the client. The actual samples are retained for a period of two months and written request is necessary in order to be retained for a longer period of time. All analytical results and records are considered strictly confidential and will not be released under any circumstances to anyone except the actual client. The analytical results included in this report apply only to the items tested.

If you have any questions please contact the Laboratory Manager or the Laboratory Director.

Sincerely,

Patricia Weakley

Patricia Weakley, Optical Asbestos Manager
Aimee Cormier, Laboratory Director

Enclosure: Version 2
LAB BATCH ID: B 100225 CLIENT PROJECT ID: 56607
Client Ref: Commercial Property - Fmr. Laundry Mat, 4130 Old Post Rd., Charlestown
AIHA ID# 102754; CT ID# PH-0209; MA ID# AA000156; ME ID# LB-055; ME ID# LA-056; NVLAP Lab Code 200090-0; RI ID # AAL-093; VT ID# AL016876

22 Cummings Park • Woburn, Massachusetts • 01801 • Phone (781)935-3212 • Fax (781)932-4857

ProScience Analytical Services, Inc.

Client Name: Silva Environmental & Associates, Inc.
PO #: N/A
Client Project #: 56607
Client Reference: Commercial Property - Fmr. Laundry Mat, 4130 Old Post Rd., Charlestown
Method: EPA/600/R-93/116

Batch: B100225
Date Sampled: 3/19/2016
Date Received: 3/22/2016
Date Analyzed: 3/23/2016
Date of Report: 3/23/2016

		Asbestos %						Non-Asbestos %						
Sample ID	Color	CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
OP-001	Black	0	0	0	0	0	0	0	0	25	0	0	0	75

Description: Roof Shingle - Right Side
Location: N/A
Comments:
Is asbestos present? No. Analyzed: Yes

		Asbestos %						Non-Asbestos %						
Sample ID	Color	CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
OP-002	Black	0	0	0	0	0	0	0	0	25	0	0	0	75

Description: Roof Shingle - Left Side
Location: N/A
Comments:
Is asbestos present? No. Analyzed: Yes

		Asbestos %						Non-Asbestos %						
Sample ID	Color	CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
OP-003	Black	0	0	0	0	0	0	0	0	55	0	0	0	45

Description: Black Paper
Location: N/A
Comments:
Is asbestos present? No. Analyzed: Yes

Asbestos Codes: CHR = Chrysotile AMO = Amosite CRO = Crocidolite ACT = Actinolite TRE = Tremolite ANT = Anthophyllite
Non-Asbestos Codes: FBG = Fiberglass MNW = Mineral Wool CEL = Cellulose HAR = Hair SYN = Synthetic OTH = Other NON = Non-Fibrous Minerals

Note: To create a unique lab sample ID, use the batch # and the Sample ID (example: [Batch #] - [Sample ID]).

* All results are in percentage.

Analyst: Patricia Weakley

CERTIFICATION OF BIDDER

FEDERAL LABOR STANDARDS PROVISIONS- DAVIS BACON ACT AND "RELATED ACTS"

This certification is required to insure that the Bidder understands that the Project or Program to which the construction work covered by any construction greater than $2,000, is being assigned by the United States of America and that the various Federal Labor Standards Provisions, summarized in the form HUD-4010, "Federal Labor Standards Provisions" are included in any such contract, pursuant to the provisions applicable to such Federal assistance.

The Bidder certifies receipt of form HUD-4010, "Federal Labor Standards Provisions", must be included and attached to each and every construction bid document and/or construction contract greater than $2,000, that is subject to the Davis-Bacon Act and "Related Acts."

Wage Determination – The Wage Determination applicable to this project is:

Determination Number:

Modification Number:

Date:

A hard copy of this Determination must be included within these bid specifications.

Wage Determination Posting – Contractors and sub-contractors shall post the prevailing wage rates for each craft and classification in a prominent and easily accessible place at the site of the work, or at such places as are used by them to pay workers.

The undersigned is required to ensure that all specifications and/or contracts include all applicable Federal wage rate determinations and the required labor standards provisions summarized by form **HUD-4010, "Federal Labor Standards Provisions."**

Weekly Certified Payrolls – It is the responsibility of each contractor and sub-contractor to submit weekly certified payrolls for project work (http://www.dol.gov/whd/forms/wh347.pdf**). It is the responsibility of the undersigned (prime contractor) to review payrolls submitted by subcontractors to ensure that there are no discrepancies or underpayments.**

CERTIFICATION BY BIDDER

Name and Address of Bidder (Include ZIP Code):

Name and Title of Signer (Please print or type below:)

_____ _____

Signature Date

EMPLOYEE RIGHTS
UNDER THE DAVIS-BACON ACT

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

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

PREVAILING WAGES

You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

OVERTIME

You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

ENFORCEMENT

Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.

APPRENTICES

Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.

PROPER PAY

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

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

For additional information:

1-866-4-USWAGE

(1-866-487-9243) TTY: 1-877-889-5627

WWW.WAGEHOUR.DOL.GOV

U.S. Department of Labor
Wage and Hour Division

PAYROLL

(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

U.S. Wage and Hour Division

Rev. Dec. 2008

NAME OF CONTRACTOR ☐ OR SUBCONTRACTOR ☐	ADDRESS	OMB No.: 1235-0008 Expires: 02/28/2018

PAYROLL NO.	FOR WEEK ENDING	PROJECT AND LOCATION	PROJECT OR CONTRACT NO.

(1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER	(2) NO. OF WITHHOLDING EXEMPTIONS	(3) WORK CLASSIFICATION	OT. OR ST.	(4) DAY AND DATE / HOURS WORKED EACH DAY							(5) TOTAL HOURS	(6) RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS FICA	WITH-HOLDING TAX			OTHER	TOTAL DEDUCTIONS	(9) NET WAGES PAID FOR WEEK
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While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that is will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

Date _____

I, _____ _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
(Contractor or Subcontractor)

_____; that during the payroll period commencing on the
(Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____,

all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full
(Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

_____

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.

Print Form

Labor Standards Section

Form 6

Wage/Fringe Benefit Certification

(To be completed by contractor/subcontractors prior to contract award.)

GRANTEE: _____ **GRANT:** _____ **PROJECT:** _____

This is to certify that _____ **plans to use the following classifications of workers on the above referenced project:**

Classification	From Applicable Wage Decision			Base Wage to be paid by Contractor	Fringe Benefits to be provided by Contractor		Total Package to be paid by **Contractor**
	Base Wage Due	Fringe Benefits Due	Total Package Due		Benefit	Hourly Amount	

Certified by: _____ **Title:** _____ **Date:** _____

(Must be certified by Owner or Chief Financial Officer)

Attach

Applicable Davis Bacon

Wage Determination

HERE

provided by WCCDC

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

April 7, 2016

Mr. Gerard N. Bertrand
c/o Washington County Community Development Corp.
400 Tower Hill Road
North Kingstown, RI 02852

RE: **Churchwoods Project, 4130 Old Post Road**
A.P. 13, Lot 43, Charlestown, RI
WQC No. 15-044; RIPDES No. RIR 101352

Dear Mr. Bertrand,

The RIDEM Office of Water Resources has reviewed the Application's Site Plans (six sheet total, including the un-numbered Cover Sheet), Reports, the Stormwater Management System Long Term Operation and Maintenance Plan Report (un-dated), and associated materials received December 22, 2015 for the project "Churchwoods", a 24-unit Senior Affordable Housing Development located on Assessor's Plat 13, Lot No. 43 in the Town of Charlestown, RI.

The discharge is stated as being to the Arnold Family White Cedar Swamp, which apparently ultimately discharges to Cross Mills Stream.

It has been determined that the above project is in compliance with the requirements of the RI Stormwater Design Installation Standards Manual, the RI Water Quality Regulations, and the Rhode Island Pollutant Discharge Elimination System (Program) provided that the Applicant complies with the above referenced application material and the following conditions:

1) You **must** notify the RIDEM contact person identified below of the anticipated date of construction and your contractor's contact information, prior to any site disturbance.

2) Prior to construction, you **shall** erect or post a sign resistant to the weather and at least twelve (12) inches wide and (eighteen) inches long, which boldly identifies the initials "DEM" and the application number(s) assigned to this permit. The sign must be maintained at the site in a conspicuous location until such time that the project is complete.

3) A copy of this permit, any inspection records, and (if the site disturbs greater than one acre) a signed and updated SESC Plan, **must** be kept at the site at all times during site preparation, construction, and final stabilization. Copies of this permit must be made available for review by any DEM or City/Town representative upon request.

4) All fill material, unless otherwise specified in the plans and report or approved by Waste Management, **shall** be clean and free of matter that could cause pollution of the waters of the State.

5) The stormwater collection and treatment system approved herein **shall not** be used to dispose of any other wastewater.

30% post-consumer fiber

6) Any alterations, additions or modifications to the stormwater system from that approved herein, including permanent closure **must** be reviewed and approved by RIDEM prior to being effected.

7) Within 30 days after completion, a Notice of Completion of Construction and Installation (or Notice of Termination for the CGP) confirming that construction and installation has been completed in accordance with the approved plans **shall** be submitted to the DEM Office of Water Resources. If modifications were made in the field that have more than a minimal impact on the functions of the stormwater system, as-built drawings must be provided with the Notice of Completion/Termination.

8) The property owner is responsible to periodically inspect, clean, and maintain the stormwater collection and disposal system for the life of the system to ensure proper performance of all components as specified by the Applicant in the above referenced Stormwater Operation and Maintenance Plan.

Please be aware that the RIDEM's Rules and Regulations Governing the Establishment of Various Fees require that RIPDES CGP permit holders to pay an Annual Fee of $100.00. An invoice will be sent to the owner on record in May/June of each year if the construction was still active as of December 31st of the previous year. The owner will be responsible for the Annual Fee until the construction activity has been completed, the site has been properly stabilized, and a completed Notice of Termination (NOT) has been received by the RIPDES Program. A copy of the NOT can be found attached to the CGP on the web page referenced above.

This proposed project is subject to tolling pursuant to RI General Laws 42-17.1-2.5. The construction aspect of this permit issued under State Law (WQC No. 15-044) shall expire on July 1, 2020.

Tolling is not applicable to the Federally Authorized "Stormwater Discharge Associated with Construction Activity" CGP 2013 permit. Your authorization to discharge expires at midnight, on September 25, 2018. If construction has not been completed by that date, there will be measures in place for you to reauthorize. Please be mindful prior to this date to follow all instructions provided by this Department regarding reauthorization.

In addition to any necessary enforcement actions stemming from the violation of any of the terms or conditions of this permit, issuance of this permit does not bar the Department, or any of its various Divisions, form instituting any investigation and/or enforcement actions that it may deem necessary for violations of any and all applicable statutes, regulations and/or permits, including but not limited to violations of the terms or conditions of any previous permit issued to you as an applicant or for this site.

This permit does not relieve your obligation to obtain any other applicable local, state and federal permits prior to commencing construction. This permit has the full force and effect of a permit issued by the Director. If you have any questions regarding the contents of the permit, you may contact Mr. Greg Swift at (401) 222-4700, extension 7708.

Sincerely,

Alisa Diaz Richardson, MS PE
Supervising Sanitary Engineer
Construction Stormwater Engineering, Floodplain and 401 Permitting
Office of Water Resources

Cc: Traci Pena, RIDEM
Richard Lucia, CRMC

THE STATE OF RHODE ISLAND,
AND
PROVIDENCE PLANTATIONS

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

"RULES AND REGULATIONS CONCERNING PERMISSION FOR USE OF STATE HIGHWAY RIGHTS-OF-WAY"

February 2005

"RULES AND REGULATIONS CONCERNING PERMISSION

FOR USE OF

STATE HIGHWAY RIGHTS-OF-WAY"

PURSUANT TO RHODE ISLAND GENERAL LAWS, CHAPTER 24-8

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1.0 AUTHORITY AND PURPOSE

1.1 The following Rules and Regulations are promulgated to administer Chapter 24-8 of the Rhode Island General Laws of 1956, as amended, and supercede all previous Rules and Regulations adopted heretofore.

1.2 The purpose of these Rules and Regulations is to prescribe conditions pursuant to Rhode Island General Laws, Chapter 24-8, under which the Rhode Island Department of Transportation will allow alterations, by Physical Alteration Permit, in the following circumstances:

Curbs

Sidewalks

Highway Access

Stormwater Disposal

Construction Within the State Highway Right-of-Way

Traffic Signals

Signage

2.0 POLICY

It is the policy of the Rhode Island Department of Transportation that all construction and modification, over, on, under, or otherwise affecting the State Highway Right-of-Way will be regulated and controlled by the Rhode Island Department of Transportation for the best interest and safety of the public, and according to recognized engineering standards. In addition, it is the policy of the Rhode Island Department of Transportation to regulate and control all stormwater runoff to the state highway drainage system without regard to the location of the source of runoff.

3.0 **DEFINITIONS** - Except as otherwise indicated, the following definitions shall apply:

3.1 **Alteration:** Any change of existing conditions within the State Highway Right-of-Way (ROW).

3.2 **Applicant:** Any individual, firm, corporation, partnership or agency, public or private.

3.3 **Application:** Physical Alteration Permit Application.

3.4 **Circular Driveway:** A Residential driveway with two (2) access openings on the same frontage.

3.5 **Commercial:** Relating to any property use other than for an individual, single-family dwelling or multi unit development.

3.6 **Construction Within the State Highway Right-of-Way:** The alteration of any structure, creation of any new structure or physical modification within the State Right-of-Way.

3.7 **Curbline:** The edge of highway pavement.

3.8 **Department:** The Rhode Island Department of Transportation.

3.9 **Director:** The Director of the Rhode Island Department of Transportation, whose address is Room 210, State Office Building, Providence, Rhode Island.

3.10 **Driveway:** Opening to a highway that permits ingress and/or egress by vehicles.

3.11 **Driveway Types:**

3.11.1 **Residential:** A driveway leading to an individual, single-family dwelling or multi unit development.

3.11.2 **Commercial:** Any driveway that is not a driveway to an individual, single-family dwelling.

3.12 **Permission:** Approval by the Rhode Island Department of Transportation of a Physical Alteration Permit Application.

3.13 **Landscaping:** Landscaping shall include the physical alteration of the existing right-of-way (beyond the roadway area) through selective clearing or pruning of existing vegetation and/or the installation of new plant material (trees, shrubs, perennials or ground cover) and new grass areas.

3.14 **Permit:** Physical Alteration Permit.

3.15 **Permittee:** Recipient of a Physical Alteration Permit.

3.0 **DEFINITIONS** - Continued

3.16 **Residential:** Relating to an individual, single-family dwelling or multi unit development.

3.17 **Roadway:** A means of vehicular access to a State Highway Right-of-Way that serves a residential or commercial development.

3.18 **Rural:** All locations not included under the Urban definition shall be considered Rural.

3.19 **Setback:** The lateral distance between the State Highway Right-of-Way line and a roadside building, gasoline pump curb base, display stand or other object, the use of which will result in space for vehicles to stop or park between such facilities and the State Highway Right-of-Way.

3.20 **State Highway Right-of-Way (R.O.W.):** Land and space acquired for, or dedicated to, highway use.

3.21 **Sidewalk:** Area beside a roadway available for pedestrian use regardless of the existence of pavement.

3.22 **State Road (State Highway) Drainage System:** The network of culverts, ditches, pipes, swales, gutters and other man-made and natural courses for draining stormwater runoff from State Highways.

3.23 **Urban:** An area, either incorporated or unincorporated, which has been developed primarily for residential and/or business purposes. An Urban area is generally characterized by: speed limits of 40 miles per hour or less, streets or highways are generally curbed, and at least fifty (50) percent of the frontage on one side of the highway within one-half mile of the site for which a permit has been requested is developed with residences and/or businesses.

3.24 **Gender of Words:** Every word importing the masculine gender only, shall be construed to extend to and include females as well as males.

3.25 **Maintenance Division:** The Maintenance Division of the Rhode Island Department of Transportation, whose address is 360 Lincoln Avenue, Warwick, RI 02888.

3.26 **Adopt-A-Spot Program:** A private group or individuals can adopt small portions of state land (ie: a small island) for the purpose of installing new plant material and/or keeping the area's existing vegetation, including grass, in a neat appearance. No selective clearing or pruning of large trees will be allowed under the Adopt-A-Spot Program.

3.0 DEFINITIONS - Continued

3.27 **Adopt-A-Highway Program:** Is a beautification program that is managed by the Department's, Highway and Bridge Maintenance Division. It is a means for private citizens, organizations, non-profit groups, businesses and/or individuals to help their community by cleaning a 2-mile segment of a secondary roadway at least 4 times per year. This is an inexpensive way for citizens to support our state's anti-litter efforts and gain tremendous satisfaction in making a contribution to their community and our state.

For more information about the Adopt-A-Highway Program and to apply, please log onto the Rhode Island Department of Transportation Home Page @ www.dot.state.ri.us and select the Adopt-A-Highway link.

4.0 PHYSICAL ALTERATION PERMIT PROCESS

4.1 Anyone seeking the permission of the Director as described herein by these Regulations, shall follow the procedure delineated below pursuant to Rhode Island General Law, Sections 24-8-9, 24-8-33 and 24-8-34.

4.2 No person, firm, corporation, utility company or agency may place or alter curbs, make a connection to, or pump or drain water to, the State Highway drainage system, or in any way make any alteration to the State Highway system without first obtaining a Physical Alteration Permit.

4.3 No access by driveway to a State Highway will be made without first obtaining a Physical Alteration Permit.

4.4 An applicant may obtain the Physical Alteration Permit Application at a Department of Transportation, Maintenance Division facility, or on-line @ www.dot.state.ri.us. At the same time, the applicant should become familiar with the applicable Regulations and Standards to avoid a resubmission fee. These Regulations and other Standards will be available on-line for review and at said facility during normal business hours.

4.5 Upon completion of the application, the applicant will then file the completed Physical Alteration Permit Application with all necessary copies of plans and computations required for the type of access as prescribed in these rules. Applications should be filed at the Maintenance Division Headquarters, 360 Lincoln Avenue, Warwick, RI 02888. For commercial applications, an estimated cost, based on items required, of the construction operations within the State Highway Right-of-Way will be required.

4.6 When the application is submitted, the applicant must provide written proof that the City Engineer or Building Inspector or other authorized agent of the affected municipality has received copies of plans describing the proposed alteration. This is not a requirement to obtain a Building Permit before applying for a Physical Alteration Permit but assurance that the local government has been apprised of the applicant's intention.

4.7 For any applications relating to a commercial alteration, all computations, plans and statements must be approved and stamped by a Rhode Island Registered Professional Engineer. If there is no drainage effect on the State Highway drainage system, the stamp of a Rhode Island Registered Land Surveyor will be an acceptable substitute. When any landscaping is part of the commercial application and it is on state property, the landscape plan must be stamped by a Rhode Island Registered Landscape Architect. Professional stamps may be required for individual, single-family dwellings at the discretion of the Department.

4.8 Any alteration that affects drainage within the State Highway Right-of-Way will require the stamp of a Rhode Island Registered Professional Engineer.

4.0 PHYSICAL ALTERATION PERMIT PROCESS - Continued

4.9 During the review process, the applicant must, at his own expense, provide any additional information regarding the proposed alteration requested by the Department.

4.10 As a result of the review, the application will be either approved as submitted within standard conditions, approved with additional conditions, or denied as submitted. The applicant will be notified by mail of the decision.

4.11 An applicant dissatisfied with the decision of the Department may appeal to the Director. The appeal must be in writing, and submitted to the Director within ten (10) days of the receipt of the decision. The appeal must include a copy of the decision.

4.12 Applicants for major projects are encouraged to coordinate early with the RIDOT. Detailed plans may require staged submissions (10%, 30%, 90% and Final).

4.13 Scenic Roadways - In accordance with State Statue, certain roadways are designated Scenic Roadways and any alteration within the highway right-of-way must receive the approval of the RI Scenic Roadways Board along with the Department's approval through the Physical Alteration Permit process. It is the responsibility of the applicant to check with the local community (or online at www.dot.state.ri.us) to see if the proposed alteration is on a Designated Scenic Roadway and provide the Department with a written determination.

4.14 Coordination with the Historic Preservation and Heritage Commission (HPHC). The Department will submit a copy of the application to HPHC for comments. HPHC will respond within 30 days. The Applicant will be responsible for addressing any comments to HPHC. Permission will not be granted until HPHC comments are resolved.

4.15 Any Commercial Application involving a location on a route serviced by the Rhode Island Public Transit Authority (RIPTA) may be subject to review and comment by RIPTA of mass transit issues.

4.16 Change in Property Ownership - It is the responsibility of the current owner/permittee to notify the Rhode Island Department of Transportation of the sale of the property and to provide the name, address, and telephone number of the new owner so that the permit may be transferred to the new owner. Failure of he owner/permittee to notify the Department or failure by the new owner to accept transfer of the permit will result in the current owner/permittee being responsible for all future work done under the permit.

5.0 FEES

5.1 No application, or resubmission of a denied application, for a Physical Alteration Permit will be accepted from any person, firm, corporation, or other entity without fee payment. Federal, State and Municipal Governments are exempt from fee payments.

5.2 Payment must be in the form of check or money order made payable to General Treasurer, State of Rhode Island. CASH WILL NOT BE ACCEPTED.

5.3 **Application Fees:**

Residential:	
Single Family	$ 100.
Multiple Unit Permits	
(A) 5 units or less	$ 200.
(B) 6-49 units	500.
(C) 50+ units	2,000.
Commercial:	
(A) <25,000 sq. ft. Building (s)	$1,000.
(B) 25,000-300,000 sq. ft. Building (s)	1,500.
(C) >300,001-750,000 sq. ft. Building (s)	2,000.
(D) >750,000 sq. ft. Building (s)	3,000.
Traffic Signal:	$5,000./per signal
Sign Installation	$ 200.

5.4 Fees are not refundable.

5.5 The Permit obtained is valid for one year from date of issuance. This Permit may be renewed for one additional year at no cost by requesting an extension in writing, including a statement that conditions have not changed from the initial submission. A second extension may also be obtained by complying with the conditions for the first extension and paying an additional fee equal to the original submission fee. No additional extensions will be permitted.

5.6 BOND REQUIREMENTS

The Permittee will be required to give security or to submit a performance bond for approval by the Department prior to the issuance of any Physical Alteration Permit. If the costs of the proposed Alteration under the Permit exceed $25,000, the Permittee shall furnish a performance bond in the amount of one hundred percent (100%) of such costs, conditioned upon the faithful performance of work associated with the Permit in accordance with all applicable specifications and conditions. Such bond shall be solely for the protection of the Rhode Island

Department of Transportation and the State of Rhode Island. The bond submitted to the Department shall be provided by a surety both acceptable to the Department and licensed and authorized to conduct business in the State of Rhode Island. All surety companies must be listed with the Department of the Treasury, Fiscal Services, Circular 570, (Latest Revision published by the Federal Register or available at http://www.treas.gov). The Department may require an additional amount of bond in connection with work added to the Permit by changes, additions and modifications by directing the Permittee to increase the penal amount of the existing bond or to obtain an additional bond.

If the costs of the proposed Alteration under the Permit are less than $25,000, the Permittee may be required to give security by depositing assets or other performance guarantee in a form acceptable to the Department in the amount of one hundred percent (100%) of such costs. If the Permittee has deposited assets instead of furnishing sureties for any bond required under the Permit and the assets are in the form of checks, currency, or drafts, the Department will hold the assets in an account for the Permittee's benefit. Upon completion of the work associated with the Permit, the Permittee's funds from such assets will be returned as soon as possible, unless the Department determines that part or all of the funds are required to compensate the Department for costs it incurs as a result of the Permittee's delay, default or failure to perform. In such a case, the funds will be available to compensate the Department.

5.7 Insurance

The Permittee or the Permittee's contractor will obtain and carry for the period of time required for the completion of the work associated with the Permit, including the repair and restoration of the State Highway Right-of-Way, and also during such future periods of time when operations are performed involving the repair, relocation, or removal of any work associated with the Permit, a liability and property damage insurance policy or policies which indemnify, defend, and hold the Department harmless from any damages arising out of operations associated with the Permit. The said insurance will provide, as a minimum, coverage in the following amounts: $500,000.00 for property damage resulting from any single occurrence ($1,000,000.00 aggregate) and $500,000.00 for the death or injury of any person, subject to a limit of $1,000,000.00 for injuries or deaths resulting from any single occurrence. The said insurance policy, or policies, will be with an insurance company authorized and licensed to do business in the State of Rhode Island. A copy of the policy, or policies, or certificate evidencing the same, will be submitted to the Department for approval prior to commencing any Alteration or Construction within the State Highway Right-of-Way associated with the Permit. The Department will be named as an additional insured on all policies. The Department, in its sole discretion, may waive the requirement for insurance.

5.8 Inspection Services

If costs are over $25,000. the applicant must hire a RIDOT approved construction inspection company that will need to certify that all work associated with the roadway and appurtenances is performed in accordance with RI Standard Specifications including any amendments thereto. The Inspection Company will be required to be present during specific phases of work as required by the RIDOT, prior to commencement of any work. All costs will be borne by the Permittee.

6.0 GENERAL RESTRICTIONS

6.1 A Physical Alteration Permit is required prior to any construction in, access to, alteration to, or any increase in drainage flow to the State Highway Right-of-Way.

6.2 **Right-of-Way Encroachment:** No part of the State Highway Right-of-Way is to be used for servicing of vehicles, displays, or for private business. The area between the pavement and the limit of the Right-of-Way (Buffer Area) shall be clear of buildings, sales exhibits, signs, parking areas, service equipment and appurtenances thereto. Notwithstanding, use by police, emergency vehicles and for emergencies is acceptable at all times.

6.3 **Parking:** Each roadside facility will provide sufficient parking or storage space off the State Highway Right-of-Way to prevent the storage of vehicles on the driveway or the backing up of traffic onto the travel lanes or shoulders.

6.4 **Setbacks:** Driveway access will not be permitted where sufficient setback is not available to prevent parking, stopping, and maneuvering within the State Highway Right-of-Way in the operations of a commercial enterprise. This generally means at least ten (10) feet from the State Highway Right-of-Way to the subject facility for operations of vehicles parallel to the centerline of the adjacent highway, and at least forty (40) feet from the State Highway Right-of-Way to the subject facility for operation of vehicles perpendicular to the centerline of the adjacent highway.

6.5 **Location of Driveways:** Driveways shall be so located as to result in no undue interference with, or hazard to, the free movement of normal highway traffic. To minimize congestion, and provide adequate safeguards for the public safety, driveway locations shall be avoided near intersections and roundabouts. Also to be avoided are locations that would interfere with the placement and proper function of highway signs, signals, lighting or other devices that affect traffic operations. Driveways should not interfere with RIPTA bus stops.

6.6 **Protection of the Traveling Public:** The Permittee shall properly safe-guard all work performed under permit and maintain sufficient working light, Rhode Island Standard Details signs and safety devices. Traffic control shall be provided by the Permittee according to the standards of the United States Department of Transportation Federal Highway Administration "Manual On Uniform Traffic Control Devices For Streets And Highways" as amended. This protection will be maintained until the project has been completed.

6.7 **Protection from Suits:** As a condition of receipt of a permit, the Permittee shall defend, indemnify, protect and save harmless the State and its agents, servants and employees from and against any and all suits, claims, losses, demands or damages of whatever kind or nature arising out of or claimed to arise out of, any act, error or omission of the Permittee, its agents, servants and employees in the engineering design and/or performance of work covered by this permit.

6.0 GENERAL RESTRICTIONS - Continued

6.8 **Land Use Change:** Should the use of property with legal access to a State Highway be altered or should its present use cause expansion of traffic, a reassessment by the Rhode Island Department of Transportation of the use of the openings and impact on drainage shall be accomplished through the Physical Alteration Permit process.

6.9 **Landscaping:** There will be no landscaping within the State Highway Right-of-Way without written approval by the Rhode Island Department of Transportation. This permission will be obtained through the Physical Alteration Permit Process and the landscape plan must include a site grading plan (if applicable) and a landscape plan showing the proposed planting layout and a plant list (Botanical and Common Name, Size, Root and Spacing). The Landscape Plan and Site Plan must be stamped by a Rhode Island Registered Landscape Architect.

All Landscape Plans must be stamped by a Rhode Island Registered Landscape Architect unless this requirement is waived in writing by the Department.

6.10 **Control Dimensions:** All driveway access to a State Highway Right-of-Way must conform to the Control Dimensions published in Section 13 of these Rules and Regulations.

6.11 Drive-thrus: For all applications involving drive-thru coffee/donut establishments or drive-thru car washes, the applicant must demonstrate that there is adequate space available to stack a minimum of ten (10) vehicles on site. This is to diminish the likelihood of vehicles stacking out into the State Highway and potentially blocking lanes of travel. For any other type drive-thru establishment (sandwich restaurant, pharmacy, banks, etc.) which does not typically exhibit such dramatic usage peaks; adequate space to stack a minimum of five (5) vehicles on site must be demonstrated. In both cases above, the stacking space shall be measured from the order board or first point of contact with the business.

6.12 Car Wash Facilities: All applications will require Shaker Bumps at the exits of the bays. Drainage control of all water associated with the car wash must be controlled in such a manner as to prevent the spread of water on the highway pavement especially during cold weather.

6.13 In addition to a Physical Alteration Permit for a sign installation, the permittee will be required to acquire a license from the Department for use of the State Highway Right-of-Way.

7.0 CONSTRUCTION WITHIN THE RIGHT-OF-WAY

7.1 All construction within the State Right-of-Way will conform to procedures and specifications delineated in the "State of Rhode Island and Providence Plantations, Department of Transportation, Standard Specifications for Road and Bridge Construction, and Standard Details" including all revisions as approved by the Department at the time of the Physical Alteration Permit submission.

7.2 Absolutely no construction will take place within the State Highway Right-of-Way without a Permit having been issued approving the construction. Any construction or change to existing topography off of State Highway Right-of-Way which causes additional flow of water onto or into the state highway drainage system is also prohibited without a Permit.

8.0 DRIVEWAYS

8.1 Driveway access to the State Highway Right-of-Way shall not be allowed without a Physical Alteration Permit.

8.2 Where a driveway is provided to a commercial establishment from a State Highway Right-of-Way, the buffer area and adjacent border area shall be reasonably cleared so that either the establishment itself or an appropriate sign located outside the State Highway Right-of-Way can be seen at sufficient distance to enable proper and safe maneuvers on the part of drivers desiring to enter or leave the establishment.

8.3 The profile of a driveway and the grading of the buffer area shall be such that a driver desiring to enter a State Highway can see a sufficient distance in all directions along the highway to enable him to enter or leave the highway without creating a hazardous situation. This may require installation of a circular driveway.

8.4 Where a circular driveway is requested by a Residential applicant, certain conditions must be met.

8.4.1 The minimum frontage on a State Highway where a circular driveway will be permitted is seventy (70) feet.

8.4.2 The interior edges of the driveways must be spaced at least thirty-five (35) feet apart at the State Highway Right-of-Way line.

8.4.3 The driveway openings shall be between ten (10) and twelve (12) feet wide.

8.4.4 All other control dimensions apply.

9.0 CURBING

9.1 No permit shall be issued unless the applicant's plans conform to the latest edition of the "Rhode Island Department of Transportation, Rhode Island Standard Details" as applicable. These Standard Details are available at the Department of Transportation, Office of the Chief Engineer, Room 224, 2 Capitol Hill, Providence, Rhode Island or online at www.dot.state.ri.us.

9.2 The Department may require that the Permittee place Portland Cement Concrete or Bituminous Cement Concrete curbing in the cases where traffic channelization, control and public safety are concerned. This placement will be done by the Permittee at his own expense.

9.3 Where curb is to be altered at a corner where sidewalks exist, wheelchair ramps shall be installed.

9.4 Where curb is proposed, the applicant will be required to demonstrate that no flooding, ponding or trapping of water on the State Highway pavement will result.

10.0 SIDEWALKS

10.1 Any alteration to a sidewalk adjoining a State Highway within a State Highway Right-of-Way requires a Permit.

10.2 In any access that cuts a sidewalk, curb returns and transition curbs will be placed as necessary to maintain the integrity of the sidewalk.

10.3 In any location where the sidewalk is crossed, the sidewalk shall either be graded to accommodate wheelchairs, or precast wheelchair ramps shall be installed. Wheelchair ramp grading shall be done in accordance with Americans with Disabilities Act (ADA) Standards.

10.4 Applicants will be encouraged to install sidewalks in locations where pedestrian traffic is anticipated.

11.0 ACCESS - ROADWAYS

11.1 Any road, municipal or otherwise, that will, by design, construction or reconstruction, intersect a State Highway Right-of-Way, must be approved through application for and issuance of a Physical Alteration Permit.

12.0 DRAINAGE

12.1 It shall be unlawful for any person, firm or corporation to make any connection into a State road drainage system, or to drain or pump water onto the traveled surface of a State Highway without first obtaining written permission from the Director of the State Department of Transportation.

12.2 When the Permittee intends to grade his property towards the State highway, the Permittee must make provision, at his own expense, for disposition of highway and/or site drainage by installing pipe, inlets, catch basins, manholes, headwalls and ditches of proper size and material as may be necessary, in the Department's determination, to protect the State's drainage rights.

12.3 Where the construction of a driveway necessitates crossing a State Highway drainage ditch, a culvert pipe shall be installed in the ditch by the Permittee at his own expense. The culvert shall be no less than twelve inches in diameter, and of sufficient size to carry the stormwater runoff from a twenty-five (25) year storm, as determined by the National Oceanic and Atmospheric Administration, for the watershed area. Under no circumstances will existing ditches, swales or gutters be filled without adequate alternate provisions for drainage being made and approved through application for and issuance of a permit.

12.4 The applicant, in the case of commercial applications, is required to submit detailed computations and site-grading plans for drainage conditions existing and proposed when applying for a Physical Alteration Permit. These computations should be made considering a storm of 10-year frequency with a duration equal to the time of concentration. These computations and plans should be approved and stamped by a Rhode Island Registered Professional Engineer. If storm drainage will not affect the State Highway drainage system, a statement of no impact should be submitted with a Physical Alteration Permit Application approved and stamped by a Rhode Island Registered Professional Engineer, or a Rhode Island Registered Land Surveyor when the property in question is graded away from the State Highway Drainage System.

12.5 Drainage Appurtenances - All facilities, pipes, drains, catch basins, manholes and other appurtenances will be as indicated in "Rhode Island Department of Transportation, Standard Details."

12.6 The applicant will be responsible to show <u>no increase</u> to either peak flow or total volume of run off from existing conditions entering the State Drainage System in a 10-year storm, unless in the case of total volume the applicant can demonstrate unconditionally that there will be no impact to the receiving [water] body(ies). In addition, if a connection to the State Drainage System is proposed, the applicant will be required to address water quality impacts through incorporation of special drainage structures such as vortechs, storm ceptors, swirl chambers, sediment ponds, created wetlands (Structural Stormwater Treatment) deep sump catch basins and though use of Best Management Practices (BMPs). Design and construction of all stormwater mitigation shall

12.0 - DRAINAGE - continued

be in accordance with the State of Rhode Island "Stormwater Design and Installation Standards Manual" by the Department of Environmental Management (RIDEM) and the RI Coastal Resources Management Council (RICRMC).

13.0 CONTROL DIMENSIONS

13.1 **Driveway Angle, Rural and Urban (Figures 1,2,3)** - Angle measured from centerline of highway to centerline of driveway: For two way operation - 90 degrees recommended and 60 degrees minimum. For one way operation - if used by vehicles in both directions of travel on highway, same as two way use, right turn only; 60 degrees maximum and 45 degrees minimum.

13.2 **Driveway Width, Rural and Urban (Figures 1,2,3)**

Residential:	10 Feet - Minimum
	20 Feet - Maximum
Commercial:	20 Feet - Maximum for one way use.
	35 Feet - Maximum for two way use.

13.3 **Edge Clearance (Figures 1,2)** - General: All portions of the driveway shall be within frontage boundary lines. For driveways with angles of about 90 degrees, the edge clearance shall not be less than the radius of curvature 7) for the junction of the driveway and pavement edges.

Rural Residential:	15 Feet - Minimum
Rural Commercial:	20 Feet - Minimum
Urban Residential:	2 Feet - Minimum
Urban Commercial:	10 Feet - Minimum

13.4 **Radius of Curvature of Junction of Driveway and Pavement Rural or Urban (Figures 1,2,3)**

Residential:	2 Feet - Minimum
	10 Feet - Maximum
Commercial:	5 Feet - Minimum
	30 Feet - Maximum

13.5 **Corner Clearance (Figure 3)**

Rural:	40 Feet - Minimum
Urban:	20 Feet - Minimum

Where there are traffic signals at the intersection, the near side edge clearance shall be twice the far side.

13.6 **Driveway Profile - (Figure 4)**

13.0 **CONTROL DIMENSIONS** - Continued

13.7 **No Highway Edge Curb, Cut Section**

From edge of pavement to the edge of the shoulder, the gradient should be the same as the shoulder pitch.

From outer edge of shoulder to low point at ditch line of open culvert edge of shoulder to low point at ditch line or open culvert, maximum downward gradient, 8%

Beyond ditch line, maximum gradient 8% for commercial driveways, 15% for others.

13.8 **No Highway Edge Curb, Fill Section**

(1) Slope across shoulder, gradient same as shoulder gradient.

(2) Beyond outer edge of shoulder, maximum gradient 8% for commercial, 15% for others; vertical curve: As flat as feasible. To prevent drag, vertical curves shall not have a hump or dip greater than 6 inches within wheelbase length of 10 feet. Crest vertical curves shall not exceed a 32 inch hump in a 10 foot chord, and sag vertical curves shall not exceed a 2 inch depression in a 10 foot chord.

13.9 **Driveways with a Two Foot Radius** - All driveways with a two (2) foot radius shall have curb returns conforming to "Rhode Island Department of Transportation, Standard Details".

13.10 **Exceptions** - Exceptions to the control dimensions and general restrictions may be granted. These exceptions must be approved by the Division Administrator, of the Highway and Bridge Maintenance Division for all individual, single-family dwelling and by the Chief Engineer of the Department of Transportation in all other cases.

14.0 TRAFFIC STUDY / SIGNAL

14.1 Traffic impact studies, prepared by a Rhode Island Registered Professional Engineer, must be submitted when a proposed development or redevelopment will generate 100 or more added (new) vehicle trips per hour during the adjacent roadway's peak hour. Or: 1) When changes are proposed in an area already suffering congestion. 2) At the judgment or discretion of the Department. 3) When a traffic signal warrant is met due to the additional trips generated.

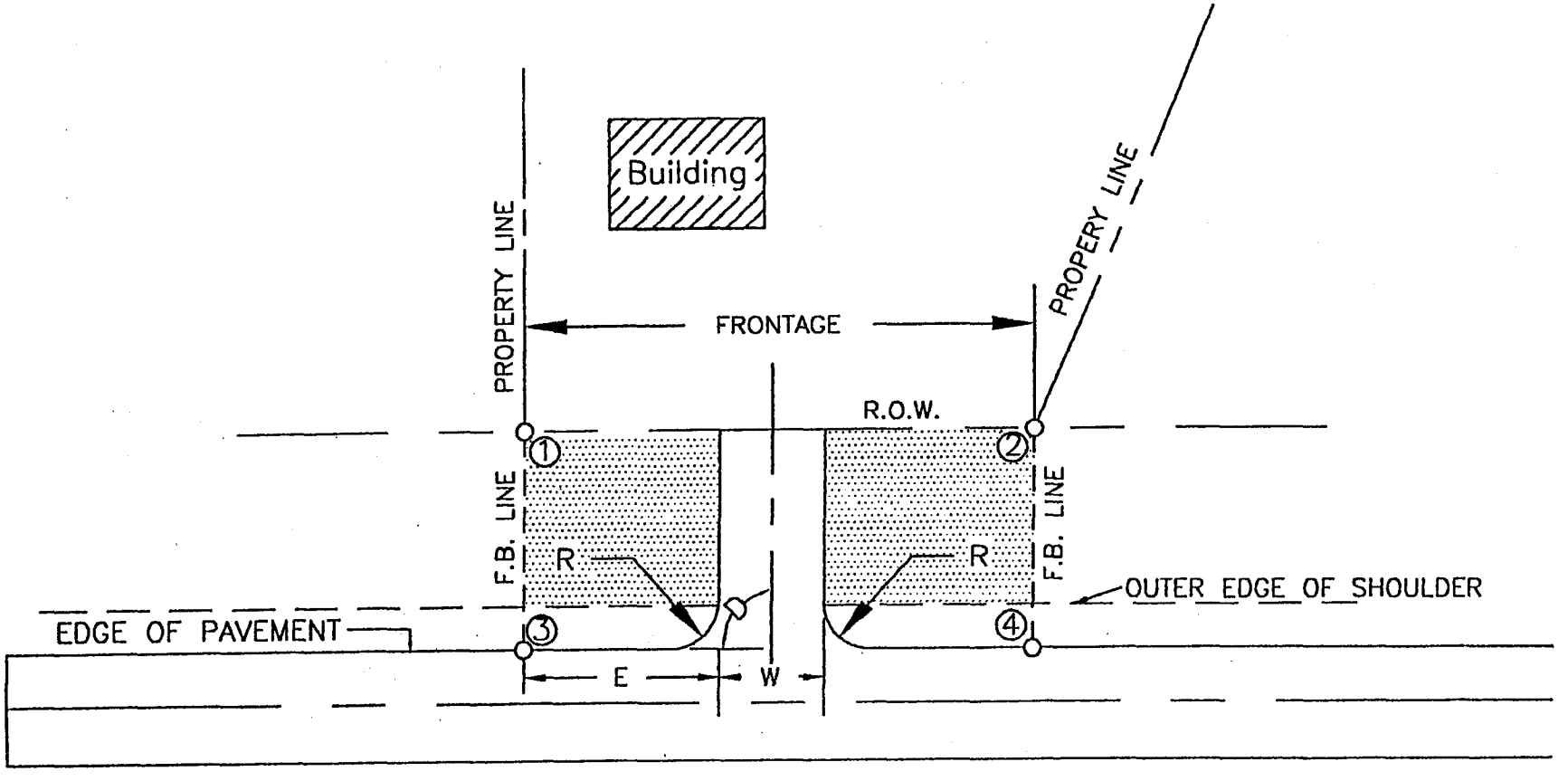
14.2 Vehicle trips for a proposed development's traffic signal warrant analysis should only be obtained by counting a fully occupied similar development in the area. The development should be similar in both size and function

14.3 Vehicle trips for a proposed development can be estimated by using the latest ITE Trip Generation Manual if a similar development does not exist in the area. ITE trip generation values are acceptable when determining Level of Service or the effect of a proposed development on adjacent roadways.

14.4 Loop Detector Easement Agreements, signed by the legal owner of record shall be submitted with the Physical Alteration Permit Application.

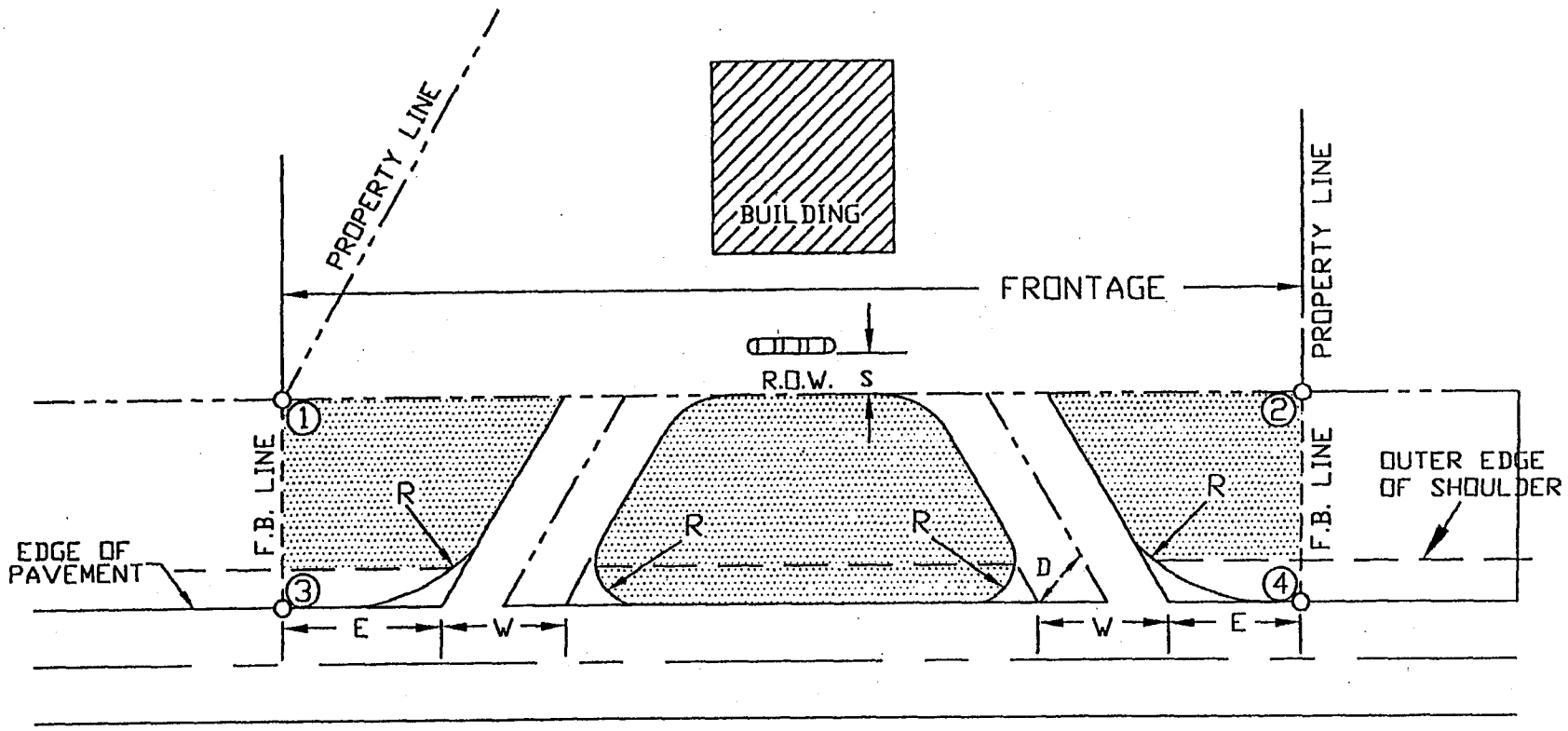
14.5 Shop Drawings for traffic signal equipment shall be sent to the Department for concurrence after being approved by the engineer who designed the signal.

14.6 A traffic signal can be placed into full operation when the following criteria are realized: 1) Geometric improvements are complete. 2) Final pavement markings are in place. 3) Regulatory and warning signs are installed. 4) The signal control equipment is fully programmed, detectors are installed and functioning, and the signal is in actuated operation. 5) If the signal is part of a coordinated system: The interconnect is installed and functioning, and the signals are operating as a coordinated system. 6) The traffic signal installation has been accepted by the Department. 7) The signal has been in flashing mode for at least 14 days. 8.) Loop Detector Easement Agreement must be signed and filed by the Department's Real Estate Section. Installation of the traffic signal hardware is required prior to alterations affecting travel lanes.



NUMBERS DESCRIBE "BUFFER AREA"
"F.B. LINE" IS FRONTAGE BOUNDARY LINE

FIGURE 1



NUMBERS DESCRIBE "BUFFER AREA"
"F.B. LINE" IS FRONTAGE BOUNDARY LINE

FIGURE 2

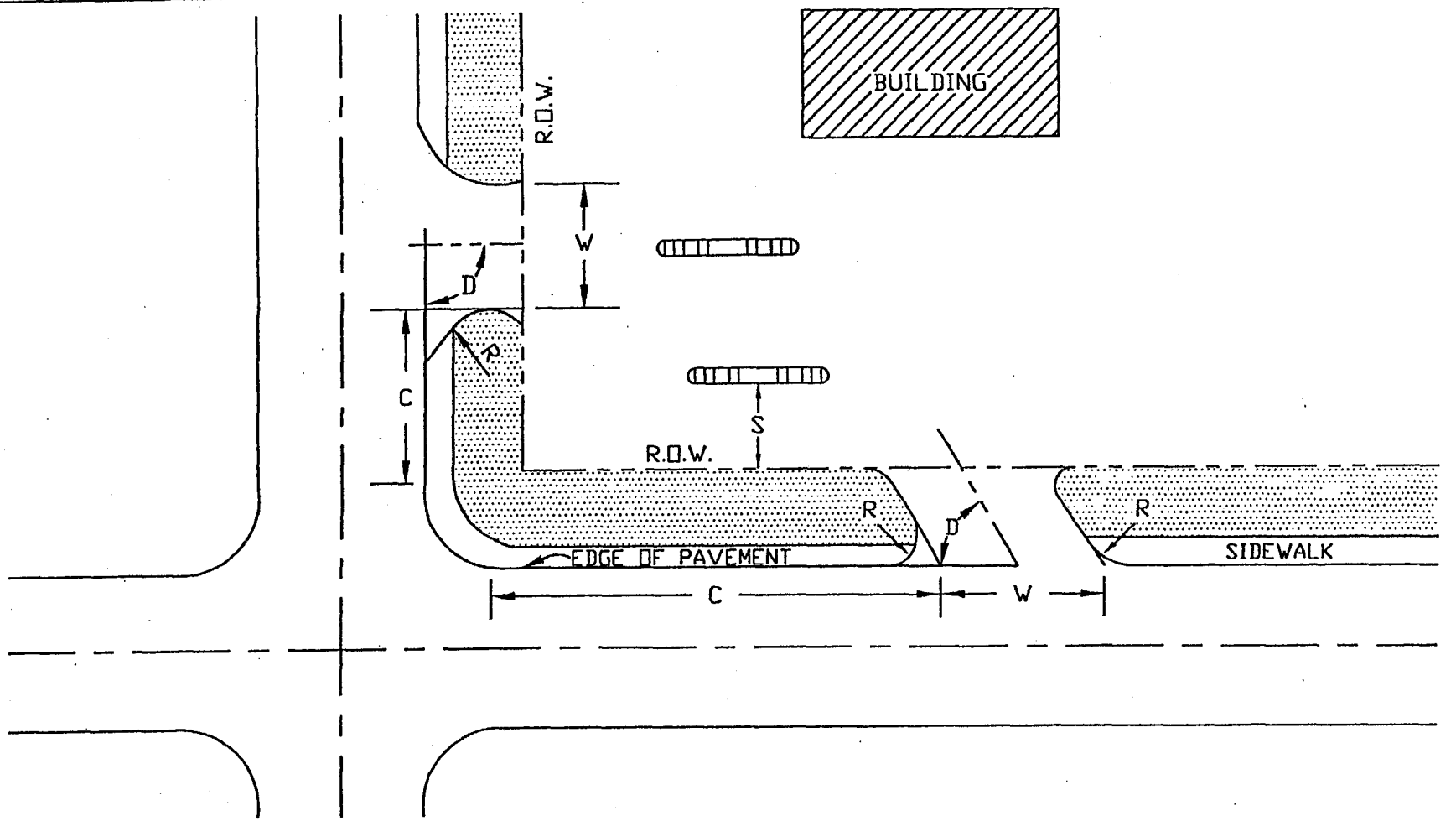
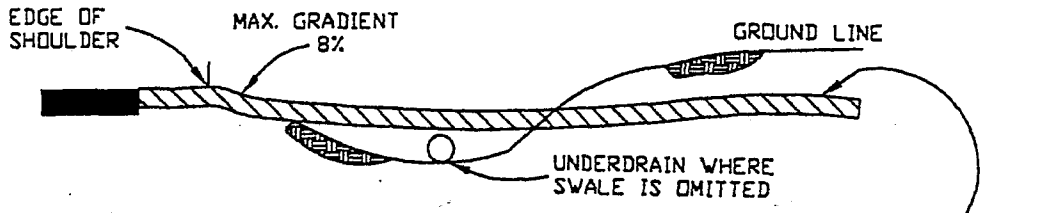
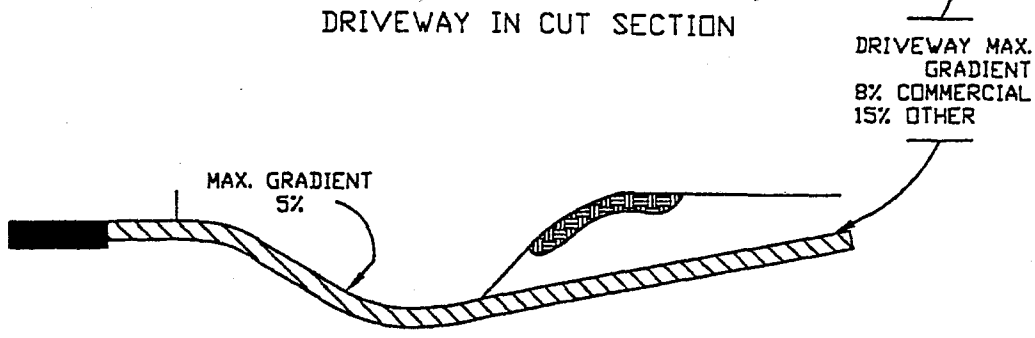


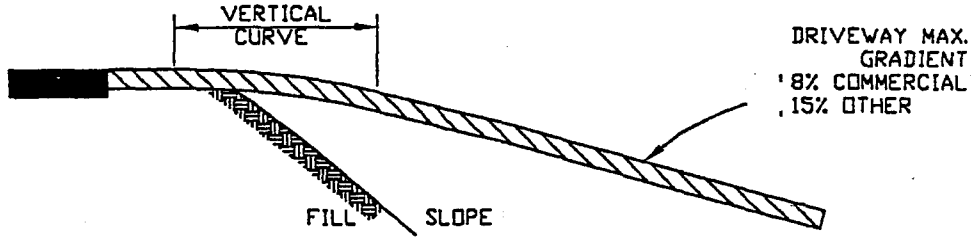
FIGURE 3



DRIVEWAY IN CUT SECTION

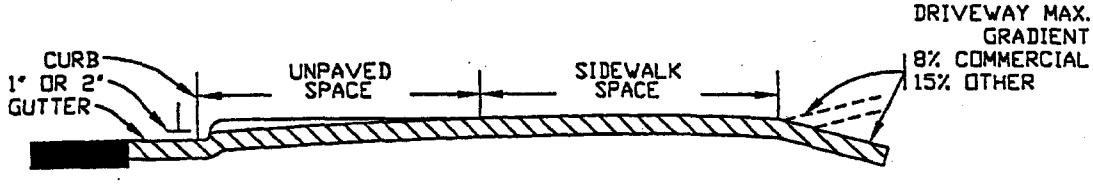


DRIVEWAY WITH VALLEY GUTTER



DRIVEWAY AT FILL SECTION

WITHOUT HIGHWAY EDGE CURB



DIFFERENCE BETWEEN GRADIENT OF DRIVEWAY AND CROSS SLOPE OF PAVEMENT SHOULD NOT EXCEED 10%

WITH HIGHWAY EDGE CURB

DRIVEWAY PROFILE CONTROLS

FIGURE 4

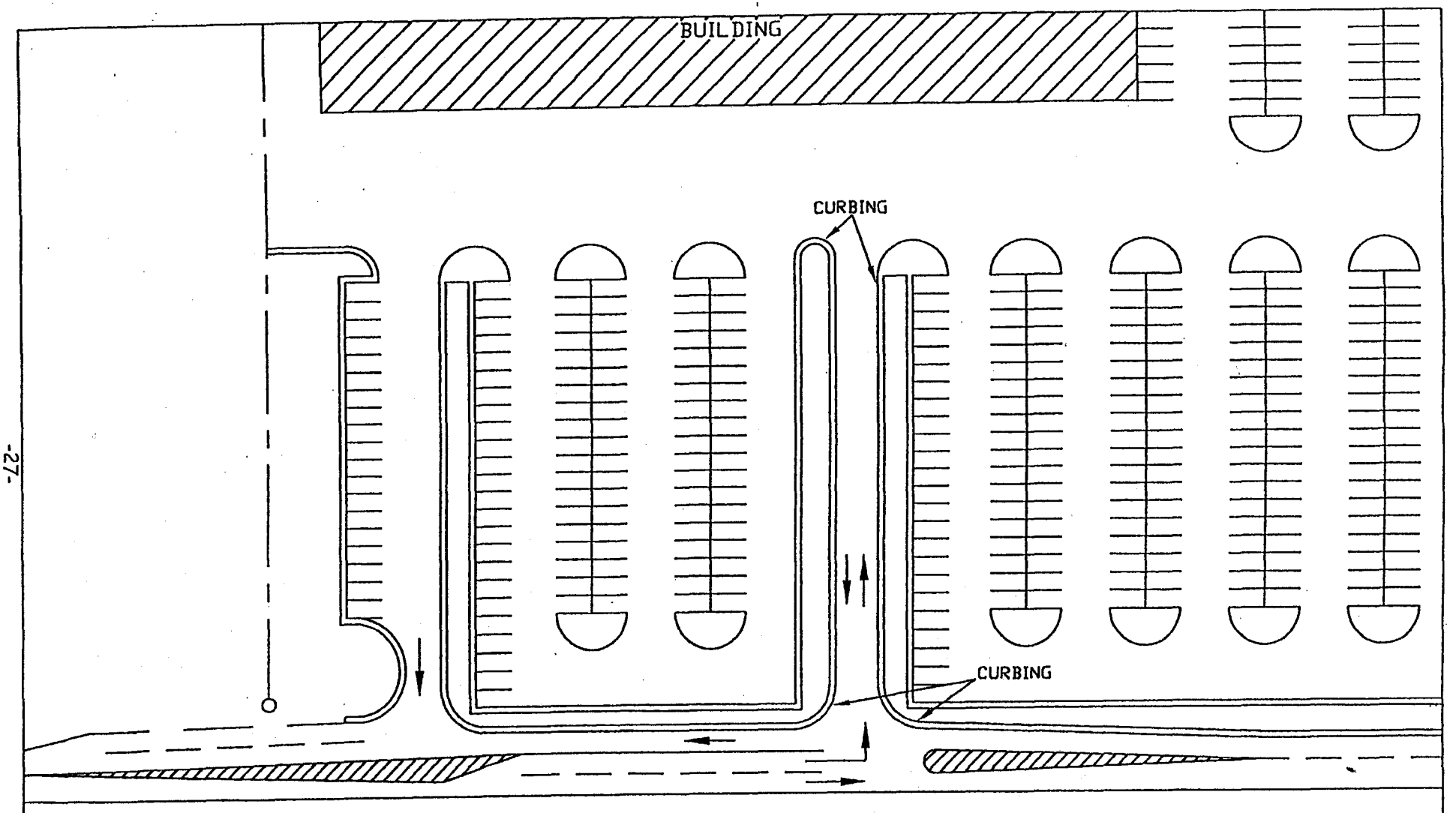
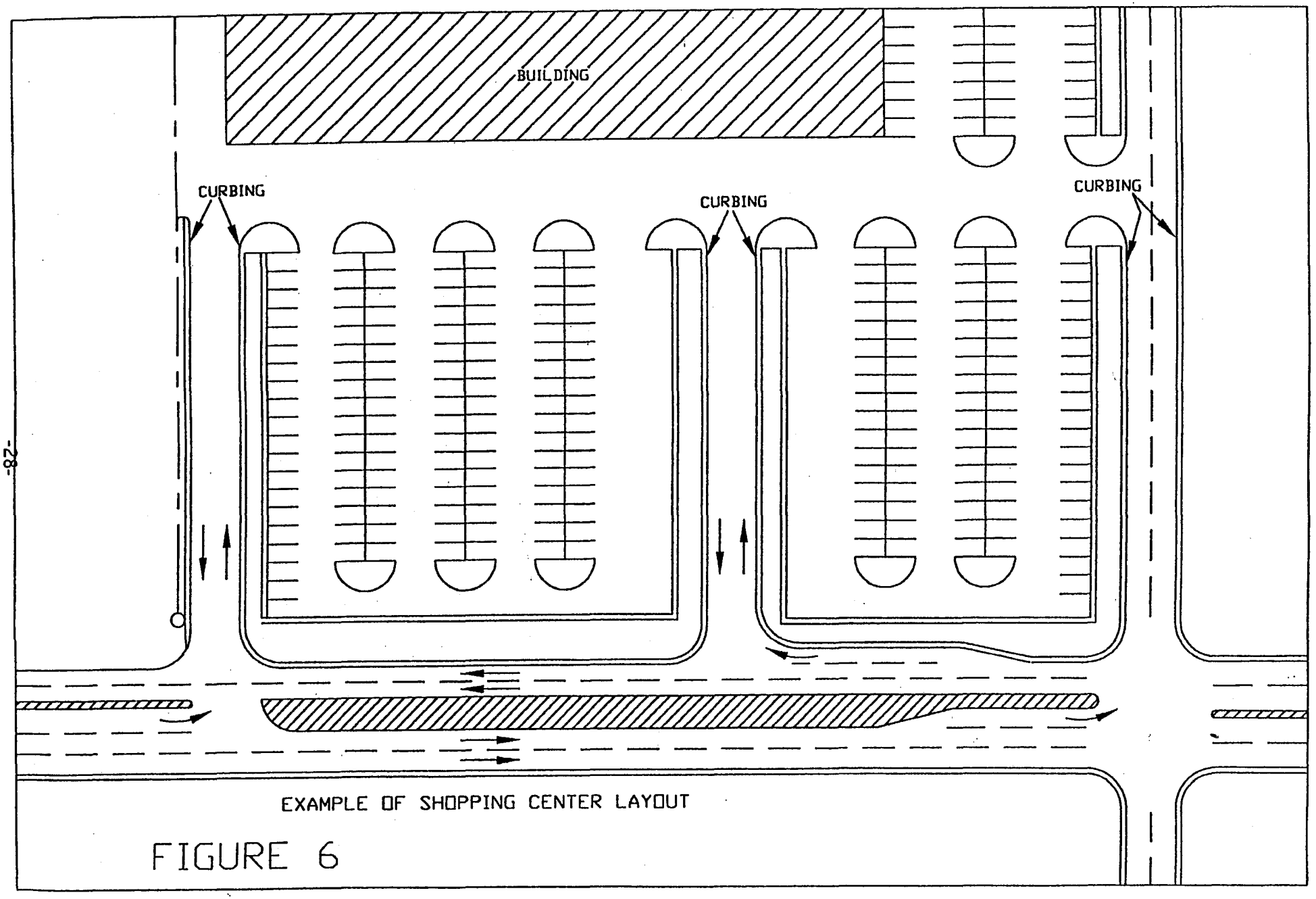
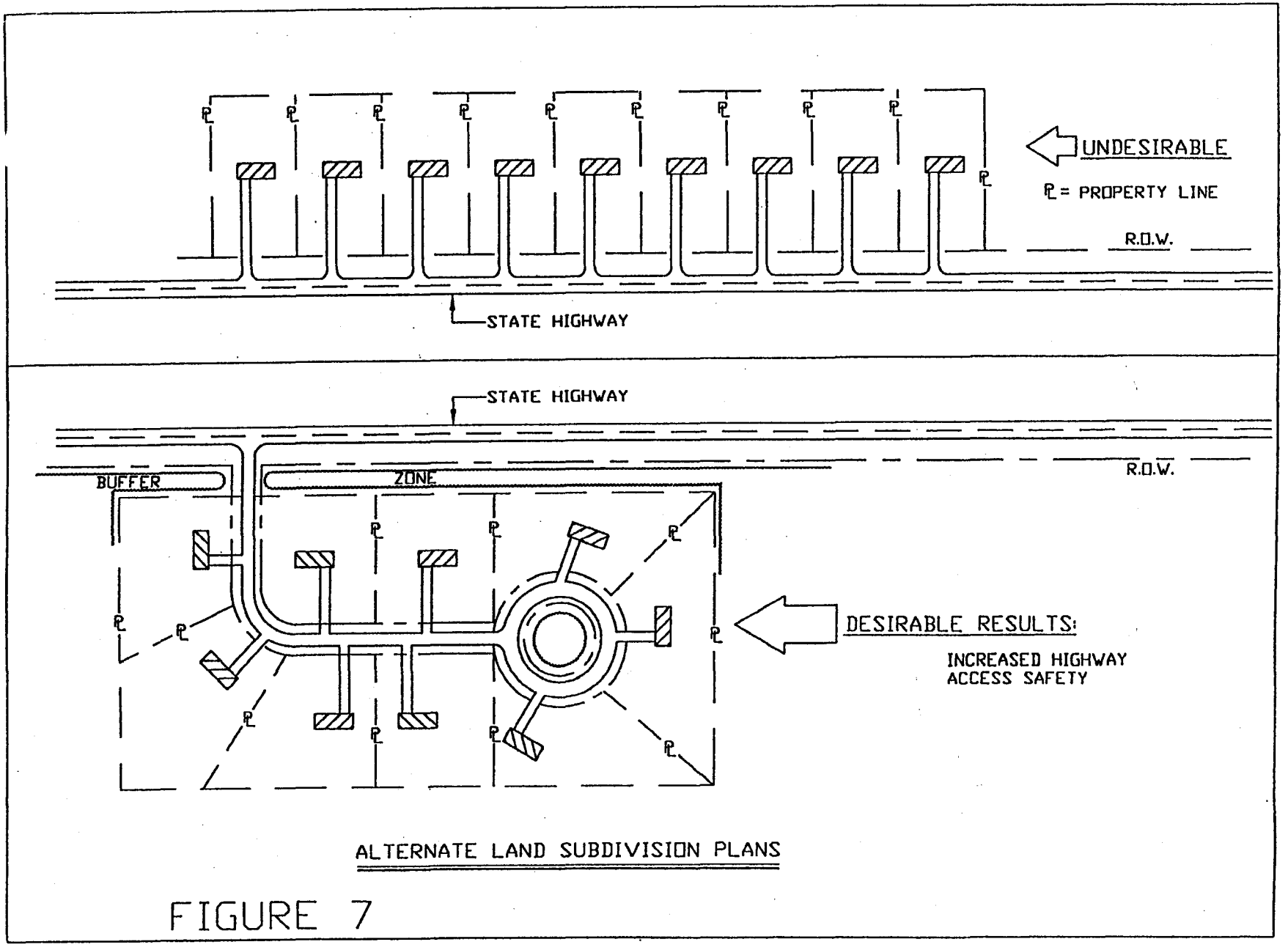


FIGURE 5 EXAMPLE OF SHOPPING CENTER LAYOUT



EXAMPLE OF SHOPPING CENTER LAYOUT

FIGURE 6



ALTERNATE LAND SUBDIVISION PLANS

FIGURE 7

CERTIFICATION

I hereby attest that the within twenty-two (22) pages of Rules and Regulations Concerning Permission For Use Of State Highway Right-of-Way have been adopted by the Department of Transportation and are true copies.

2-28-05
Date

James R. Capaldi, P.E
Director
Rhode Island
Department of Transportation

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work under separate contracts.
5. Access to site.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and drawing conventions.
9. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: Church Woods

1. Project Location: **4130 Old Post Road, Charlestown, Rhode Island**

B. Owner: ChurchWoods, LLC

1. Owner's Representative: Mr. Gerard Bertrand

Washington County Community Development Corp.

C. Architect: Union Studio Architecture and Community Planning, Inc. 140 Union Studio, Providence, RI

D. Contractor: TBD

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. The **“ChurchWoods”** project consists of new wood frame, slab on grade construction of twenty-four (24) one-bedroom dwelling units in seven (7) buildings, one community

building and a well house. Project includes demolition of an existing building and parking area. Site improvements include, but not limited to new drive lane, parking, storm water management system, new septic, new well, site lighting, site power, and new landscaping

B. Type of Contract.

1. Project will be constructed under a single prime contract.

1.4 WORK PHASES

The building is vacant and work may commence at any time the Owner is ready to proceed with construction.

1.5 PRODUCTS ORDERED IN ADVANCE

A. General: If Owner has negotiated Purchase Orders with suppliers of material and equipment to be incorporated into the Work, The Owner will assign these Purchase Order to Contractor. Cost for receiving, handling, storage if required, and installation of material and equipment are included in the Contract Sum.

B. List of Products Ordered in Advance:
1. No Products ordered in advance at this time.

1.6 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to areas where work is to be performed only.

1.7 COORDINATION WITH OCCUPANTS

A. Not Used.

1.8 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated or adjusted by the Owner.

C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

D. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.

E. Controlled Substances: Use of tobacco products and other controlled substances within the existing building is not permitted.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.10 MISCELLANEOUS PROVISIONS

A. This project exempt from state sales tax.

B. This project is a prevailing wage job under the Davis-Bacon Act.

1. The CONTRACTOR shall abide by all State, Local and Federal Laws, Codes and Regulations, including all provisions, conditions and stipulations of the DAVIS-BACON ACT, and all provisions, conditions and stipulations of RHODE ISLAND GENERAL

LAW as applicable. THIS IS A PREVAILING WAGE JOB AND CERTIFIED PAYROLLS MUST BE SUBMITTED TO THE TOWN BEFORE PAYMENT IS MADE.

2. Bidders are advised that this is a Prevailing Wage Rate (Davis-Bacon) project. The successful bidder MUST submit Weekly Certified Payroll Reports, using applicable FEDERAL forms (this work is funded through the federal Community Development Block Grant-Disaster Recovery program). The current wage rate decision is attached to the bid documents. The rates will be checked 10 days before the bid due date and, if modified, the new rates will apply. Further, the provisions of Section 3, the hiring of low to moderate income persons, particularly from the project area, also apply to this project. A Section 3 Report is appended to the bid packet and must be submitted with the final invoicing for the work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Unit-cost allowances.
3. Quantity allowances.
4. Contingency allowances.
5. Testing and inspecting allowances.

C. Related Requirements:

1. Section 012200 "Unit Prices" for procedures for using unit prices.
2. Section 014000 "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

1.2 SELECTION AND PURCHASE

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

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

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

1.3 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.4 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 LUMP-SUM, UNIT-COST AND QUANTITY ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include freight and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner and selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.7 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 TESTING AND INSPECTING ALLOWANCES

A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.

B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

C. Costs of services not required by the Contract Documents are not included in the allowance.

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

1.9 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

ALLOWANCE NO. 1 CONSTRUCTION SIGN - $1,500

1. Includes labor and materials for installation of a 4'x8' project construction sign, white Alumlite, single sided with full color graphics. Provide posts, hardware and installation. Sign design provided by Owner.

ALLOWANCE NO. 2 BUILDING IDENITY SIGN - $5,000

1. Includes labor and materials for installation of a 2'x4'building sign, painted wood, post mounted, single sided with full color graphics. Sign design provided by Owner.

ALLOWANCE NO. 3 PH TREATMENT FOR WATER QUALITY

1. Includes labor and materials for the installation of a Ph/corrosion control system with a sodium carbonate,(soda ash), chemical feed system. The system to include a 40 to 50 gallon batch tank on a spill pallet with a flow proportional chemical metering pump and all necessary power needs. System to comply with all local, state and federal regulations.

END OF SECTION 012100

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

1.2 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

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

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

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

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

For all unit prices, refer to Bid Form

END OF SECTION 012200

SECTION 02221
ENVIRONMENTAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Asbestos.

B. Lead-Based Paint (LBP)

C. Oil Tanks.

D. Other hazardous materials

1.2 SUBMITTALS

A. Submit copies of all licenses, permits, approvals, test results, disposal manifests, clearance testing reports to the Owner upon completion of the work.

PART 2 - STANDARDS

2.1 All work shall be performed in a manner as may be required and approved by, but not limited to, Rhode Island Department of Health (RIDOH), Department of Environmental Management (DEM), Occupational Safety and Health Administration (OSHA), and any other federal, state and/or local regulating authorities having jurisdiction therein.

2.2 All work shall be performed in a manner as may be required and approved by the Owner.

2.3 RIDOH Environmental Lead Program - "Rules and Regulations for Lead Poisoning Prevention" (R23-24.6-PB), February 1992, and all Amends.

2.4 RIDEM, Air Pollution Control Regulation No. 24.

2.4 Roofs are to be tested for asbestos per Phase I Environmental testing by Owner.

PART 3 - EXECUTION

3.1 All existing materials, or suspected materials, containing asbestos, shall be removed and/or abated in the manner as defined in the Asbestos Abatement Plans prepared by the contractor's environmental engineer, and as per 2.2.1 and 2.2.2. Clearance air samples and dump receipts for asbestos abatement shall be required as a condition of project closeout.

3.2 All existing materials, or suspected materials, containing lead based paint shall be removed and/or abated in a manner as defined, approved and regulated as per 2.2.1, 2.2.2, 2.2.4, 2.2.5 and per state regulations.

3.3 Post-construction clearance testing (for LBP) shall be required for all soils contained within the project sites, paid for by Owner.

3.4 All existing oil storage tanks, above or below ground, shall be pumped free of all liquids and all hazardous regulated as per 2.2.1, 2.2.2, 2.2.4, 2.2.5. Dump receipts for waste oil removed shall be required as a condition of project closeout.

3.5 All other existing or suspected hazardous materials including, but not limited to, paints, thinners, gasoline and kerosene shall be removed and disposed of in a manner as approved, and regulated as per 2.2.1, 2.2.2, 2.2.4, 2.2.5.

3.6 Project closeout requires testing for lead in drinking water – paid for by Owner.

3.7 All post abatement testing inclusive of post abatement water testing must be completed by a licensed independent third party consultant hired directly by the Owner.

PART 4 - COSTS

4.1 The costs of all licenses, permits, fees, inspections, approvals, disposal and/or abatement of hazardous materials, or suspected hazardous materials shall be paid for by the Contractor.

4.2 Asbestos Abatement Plan shall also be paid for by the Contractor.

4.3 Lead Testing by Owner.

PART 5 - REFERENCES

5.1 A Summary of RIDOH - "Regulatory Report for Lead Based Paint Removal" (revised January 1995) is available at the office of the Owner

END OF SECTION 012221

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

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

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

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

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

1. Refer to Bid Form

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use CSI Form 13.1A.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

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

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.

b. Requested substitution will not adversely affect Contractor's construction schedule.
c. Requested substitution has received necessary approvals of authorities having jurisdiction.
d. Requested substitution is compatible with other portions of the Work.
e. Requested substitution has been coordinated with other portions of the Work.
f. Requested substitution provides specified warranty.
g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed unless otherwise indicated.

C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after commencement of the Work

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Requested substitution will not adversely affect Contractor's construction schedule.
e. Requested substitution has received necessary approvals of authorities having jurisdiction.
f. Requested substitution is compatible with other portions of the Work.
g. Requested substitution has been coordinated with other portions of the Work.
h. Requested substitution provides specified warranty.
i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Work Change Proposal Request Form: Use form acceptable to Architect.

1.4 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Work Change Directive: Architect may issue a Construction Work Change Directive on AIA Document G714. Construction Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Work Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
2. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
3. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with continuation sheets.
b. Submittal schedule.
c. Items required to be indicated as separate activities in Contractor's construction schedule.

2. Submit the schedule of values to Architect at earliest possible date but no later than 30 days after Owner and Contractor have formalized a contract.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

a. Project name and location.
b. Name of Architect.
c. Architect's project number.
d. Contractor's name and address.
e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

9. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

    1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Architect by the 3rd day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

D. Application for Payment Forms: Use forms acceptable to Owner and Architect for Applications for Payment. Sample copies are included in Project Manual.

E. Change Orders: When preparing Application for Payment, Contractor cannot include Change Order on requisition until Rhode Island DOA, Department of Purchasing has issued a purchase order for respective Changer Order.

F. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

G. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Schedule of unit prices.
5. Submittal schedule (preliminary if not final).
6. Initial progress report.
7. Report of preconstruction conference.
8. Certificates of insurance and insurance policies.

J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707-1994, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination drawings.
2. Requests for Information (RFIs).
3. Project Web site.
4. Project meetings.
5. Coordination with other campus projects.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.3 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

1.4 GENERAL COORDINATION PROCEDURES

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

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

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

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.5 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
b. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid.
2. Plenum Space: Indicate sub-framing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility.

1.6 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Forms: Form bound in Project Manual.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow 10 working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

   a. Requests for approval of submittals.
   b. Requests for approval of substitutions.
   c. Requests for coordination information already indicated in the Contract Documents.
   d. Requests for adjustments in the Contract Time or the Contract Sum.
   e. Requests for interpretation of Architect's actions on submittals.
   f. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. Phasing.
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Procedures for processing field decisions and Change Orders.
    f. Procedures for RFIs.
    g. Procedures for testing and inspecting.
    h. Procedures for processing Applications for Payment.
    i. Distribution of the Contract Documents.
    j. Submittal procedures.
    k. Sustainable design requirements.
    l. Preparation of record documents.
    m. Use of the premises and existing building.
    n. Work restrictions.
    o. Working hours.
    p. Owner's occupancy requirements.
    q. Responsibility for temporary facilities and controls.
    r. Procedures for moisture and mold control.
    s. Procedures for disruptions and shutdowns.
    t. Construction waste management and recycling.
    u. Parking availability.
    v. Office, work, and storage areas.
    w. Equipment deliveries and priorities.
    x. First aid.
    y. Security.
    z. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Progress Meetings: Conduct progress meetings at regular intervals.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site utilization.
        8) Temporary facilities and controls.
        9) Progress cleaning.
        10) Quality and work standards.
        11) Status of correction of deficient items.
        12) Field observations.
        13) Status of RFIs.
        14) Status of proposal requests.
        15) Pending changes.
        16) Status of Change Orders.
        17) Pending claims and disputes.
        18) Documentation of information for payment requests.

3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

    a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting. Retain "Pre-installation Conferences" Paragraph below if Project requires pre-installation conferences. Limit pre-installation conferences to major assemblies if the Work requires tight control and coordination. If necessary, individual Sections should specify pre-installation conferences as a requirement and should reference this Section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 10 days for review of each resubmittal.

C. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Name of subcontractor.
g. Name of supplier.
h. Name of manufacturer.
i. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

j. Number and title of appropriate Specification Section.
k. Drawing number and detail references, as appropriate.
l. Location(s) where product is to be installed, as appropriate.
m. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.

a. Transmittal Form for Paper Submittals: Use AIA Document G810.
b. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

1) Project name.

2) Date.
3) Destination (To:).
4) Source (From:).
5) Name and address of Architect.
6) Name of Construction Manager.
7) Name of Contractor.
8) Name of firm or entity that prepared submittal.
9) Names of subcontractor, manufacturer, and supplier.
10) Category and type of submittal.
11) Submittal purpose and description.
12) Specification Section number and title.
13) Specification paragraph number or drawing designation and generic name for each of multiple items.
14) Drawing number and detail references, as appropriate.
15) Indication of full or partial submittal.
16) Transmittal number, numbered consecutively.
17) Submittal and transmittal distribution record.
18) Remarks.
19) Signature of transmitter.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

   a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner and Architect**,** containing the following information:

   a. Project name.
   b. Date.
   c. Name and address of Architect.
   d. Name of Construction Manager.
   e. Name of Contractor.
   f. Name of firm or entity that prepared submittal.
   g. Names of subcontractor, manufacturer, and supplier.
   h. Category and type of submittal.
   i. Submittal purpose and description.
   j. Specification Section number and title.
   k. Specification paragraph number or drawing designation and generic name for each of multiple items.
   l. Drawing number and detail references, as appropriate.

m. Location(s) where product is to be installed, as appropriate.
n. Related physical samples submitted directly.
o. Indication of full or partial submittal.
p. Transmittal number, numbered consecutively.
q. Submittal and transmittal distribution record.
r. Other necessary identification.
s. Remarks.

5. Metadata: Include the following information as keywords in the electronic submittal file metadata:

a. Project name.
b. Number and title of appropriate Specification Section.
c. Manufacturer name.
d. Product name.

E. Options: Identify options requiring selection by Architect.

F. Deviations: Identify deviations from the Contract Documents on submittals.

G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Post electronic submittals as PDF electronic files directly to site specifically established for Project.

a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Submit electronic submittals via email as PDF electronic files. Contractor to provide one electronic submission to the Architect and one electronic submission to Department of Administration Representative who will later be identified.

    a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

3. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect will return two copies.
4. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:

    a. PDF electronic file.

b. Three paper copies of Product Data unless otherwise indicated. Architect will return two copies.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
3. Submit Shop Drawings in the following format:

a. PDF electronic file.
b. 3 opaque (bond) copies of each submittal. Architect will return 2 copies.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of applicable Specification Section.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit four sets of Samples. 3 sets to Architect and one set to Department of Administration care of representative to be determined at a later date.. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample. DOA will retain their samples.

        1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Submit product schedule in the following format:

    a. PDF electronic file.
    b. Three paper copies of product schedule or list unless otherwise indicated. Architect will return two copies.

F. Coordination Drawings Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."

G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures.

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

U. Schedule of Tests and Inspections: Comply with requirements specified in Section 014000 "Quality Requirements."

V. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

W. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

X. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.
3. Specific test and inspection requirements are not specified in this Section.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
1. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.5 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
5. Other required items indicated in individual Specification Sections.

C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
d. When testing is complete, remove test specimens, assemblies,mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed unless otherwise indicated.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of

substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Cost or use charges for water use and disposal are not chargeable to Owner or Architect and shall be included in the Contract Sum.

C. Electric Power Service from Existing System: Cost or use charges for electric use are not chargeable to Owner or Architect and shall be included in the Contract Sum

1.3 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire prevention program.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:

1. Keep temporary services and facilities clean and neat.
2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.

B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts.

C. Wood Enclosure Fence: Plywood, 6 feet (1.8 m) high, framed with four 2-by-4-inch (50-by-100-mm) rails, with preservative-treated wood posts spaced not more than 8 feet (2.4 m) apart.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
1. Any use of storage or fabrication sheds are not allowed unless approved by Owner in written form.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

B. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

adequate for construction. Coordinate with City of Cranston.

C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use. Coordinate with City of Cranston.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service:

1. Contractor shall make necessary arrangements and provide temporary electric service and lighting required during entire construction period. Account will be set up in Contractor's name. Metered cost of electricity used shall be borne by Contractor for period from beginning of Work until building is occupied by Owner. When date is established that Owner assumes responsibility for account, Contractor shall notify utility company and arrange to have meter read and account transferred to Owner. Contractor is responsible for charges incurred until account has been properly transferred. Costs for reading or transferring account shall be borne by Contractor.

H. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead unless otherwise indicated.

I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated within construction limits indicated on Drawings. Coordinate with the Department of

Administration road improvement projects that are occurring with the State, on-site or areas affecting the site.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Section 312000 "Earth Moving."
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Section 321216 "Asphalt Paving."

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

    a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touchup signs so they are legible at all times.

H. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

I. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

K. Temporary Elevator Use: Use of elevators is not permitted.

L. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

M. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Temporary Erosion and Sedimentation Control: Comply with requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 311000 "Site Clearing."

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

F. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."

G. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

H. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

I. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

J. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.

K. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

L. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

M. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

N. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire prevention program.

1. Prohibit smoking in construction areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 MOISTURE AND MOLD CONTROL

A. Contractor's Moisture Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Discard or replace water-damaged and wet material.
4. Discard, replace, or clean stored or installed material that begins to grow mold.
5. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Remove materials that can not be completely restored to their manufactured moisture level within 48 hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 01 56 39
TREE PROTECTION AND TRIMMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to work of this section.

B. Related Sections: The following sections contain requirements that relate to this section.
   1. Section 31 00 00 - Earthwork

1.2 DESCRIPTION OF WORK

A. Trees, which are to remain and must be protected.

B. Work includes trimming and protection of trees that are indicated to remain but interfere with or are in close proximity to new construction, as herein specified. All tree work shall be performed with the approval of the Landscape Architect and under the direction of a qualified Arborist, see section 1.3 “Quality Assurance”, herein.

C. Refer to Demolition Plans, which shows limits of removal of trees, shrubs and other vegetation interfering with new construction, unless otherwise shown.

1.3 QUALITY ASSURANCE

A. Arborist: Engage a Rhode Island Certified Arborist to perform the following work:
   1. Remove branches from trees, which are to remain, if required to clear for new construction.
   2. Recommend procedures to compensate for loss of roots, if any, and perform initial pruning of branches to stimulate root growth where removed to accommodate new construction.
   3. Perform tree repair work for damage incurred by new construction.
   4. Remove dead wood, crossing branches and any other tree trimming on trees which are to remain, as required by the Landscape Architect.

1.4 SUBMITTALS

A. Submit current State certification to the Owner’s Representative.

B. Submit written certification by qualified Arborist in Rhode Island to the Owner’s Representative that trees indicated to remain have been protected during the course of construction in accordance with recognized standards of the industry. Also certify that where damage did occur trees were promptly and properly treated. Indicate which damaged trees, if any, are incapable of retaining full growth potential and are recommended to be removed and replaced.

1.5 JOB CONDITIONS

A. Temporary Protections: Provide temporary fencing, barricades or guards to protect trees and other plants, which are to remain, from damage.

B. Protect Root Systems: The contractor shall not store construction materials, debris or excavated material within drip line (outer perimeter of branches). The contractor shall not permit vehicles within drip line. The Contractor shall restrict foot traffic to prevent excessive compaction of soil over root systems.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Drainage Crushed Stone: Selected stone or gravel, graded to pass criteria established in Section 31 00 00 - Earthwork.

B. New Topsoil: Fertile, friable, surface soil, containing natural loam. Refer to Preparation for planting beds 32 93 01 – Trees, Shrubs and Groundcover.

PART 3 - EXECUTION

3.1 GENERAL

A. Protect tree root systems from damage due to noxious materials and solution caused by run-off or spillage during mixing and placement of construction materials, or drainage from stored materials. Protect root systems from flooding, erosion or excessive wetting resulting from dewatering operations.

B. Do not allow fires under or adjacent to trees or other plants which are to remain.

C. Remove branches from trees that are to remain, if required and authorized by the Landscape Architect to clear for new construction.
1. Where directed by Landscape Architect, extend pruning operation to restore natural shape of entire tree.

D. Cut branches and roots, where required, with sharp pruning instruments; do not break or chop.

3.2 EXCAVATION AROUND TREES

A. Excavate within drip line of trees only where indicated.

B. Where trenching for utilities is required within drip line, tunnel under or around roots by hand digging. Do not cut main lateral roots or tap roots; cut only smaller roots which interfere with installation of new work. Cut roots with sharp pruning instruments; do not break or chop.

C. Where excavating for new construction is required within drip line of trees, hand excavate to minimize damage to root systems. Provide sheeting at excavations if required. Use narrow tine spading forks and comb soil to expose roots.
   1. Relocate roots in backfill areas wherever possible. If large, main lateral roots are encountered, expose beyond excavation limits, as required, to bend and relocate without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately 3" back from new construction

D. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover, or pack with peat moss and wrap with burlap. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with earth.

E. Prune branches to balance loss to root system caused by damage or cutting of root system.

3.3 GRADING AND FILLING AROUND TREES

A. Maintain existing grade within drip line of trees, unless otherwise indicated.

B. Lowering Grades: Where existing grade is above new finish grade shown around trees, carefully hand excavate within drip line to new finish grade. Cut roots exposed by excavation or provide permanent protections as recommended by Arborist.
   1. Prune branches to stimulate root growth and to compensate for loss of roots. Provide subsequent maintenance during the contract period as recommended by Arborist. Provide Owner with typed instructions for recommended long-range maintenance procedures to be followed after completion of construction operations.

C. Raising Grades:
   1. Minor Fills: Where existing grade is 6" or less below elevation of finish grade shown, use topsoil fill material specified. Place in single layer and do not compact; hand grade to required finish elevations.
   2. Moderate Fills: Where existing grade is more than 6", but less than 12" below finish grade elevation, place a layer of drainage fill on existing grade prior to placing topsoil. Carefully place against trunk of tree approximately 2" above finish grade elevation and extend not less than 18" from tree trunk on all sides. For balance of area within drip line perimeter, place drainage fill to an elevation 6" below grade and complete fill with a layer of topsoil to finish grade elevation. Do not compact drainage fill or topsoil layers; hand grade to required elevations.

3.4 REPAIR AND REPLACEMENT OF TREES

A. Repair trees damaged by construction operations. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.

B. Remove and replace dead and damaged trees that are determined by Arborist to be incapable of

restoration to normal growth pattern.

1. Provide new trees of same size and species as those being replaced. Plant and maintain as specified under Section "Trees and Shrubs".

C. If trees over 6" in caliper measurement taken 12" above grade are required to be replaced, provide new trees of 6" caliper size, and of species selected by the Landscape Architect.

3.5 DISPOSAL

A. Burning on Owner's Property: Burning of removed trees and branches is not permitted on site.
B. Removal from Owner's Property: Remove excess excavation, displaced trees, and trimmings and legally dispose of off Owner's property unless otherwise indicated.

END OF SECTION

SECTION 01 56 39
TREE PROTECTION AND TRIMMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to work of this section.

B. Related Sections: The following sections contain requirements that relate to this section.
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1.2 DESCRIPTION OF WORK

A. Trees, which are to remain and must be protected.

B. Work includes trimming and protection of trees that are indicated to remain but interfere with or are in close proximity to new construction, as herein specified. All tree work shall be performed with the approval of the Landscape Architect and under the direction of a qualified Arborist, see section 1.3 “Quality Assurance”, herein.

C. Refer to Demolition Plans, which shows limits of removal of trees, shrubs and other vegetation interfering with new construction, unless otherwise shown.

1.3 QUALITY ASSURANCE

A. Arborist: Engage a Rhode Island Certified Arborist to perform the following work:
1. Remove branches from trees, which are to remain, if required to clear for new construction.
2. Recommend procedures to compensate for loss of roots, if any, and perform initial pruning of branches to stimulate root growth where removed to accommodate new construction.
3. Perform tree repair work for damage incurred by new construction.
4. Remove dead wood, crossing branches and any other tree trimming on trees which are to remain, as required by the Landscape Architect.

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A. Submit current State certification to the Owner’s Representative.

B. Submit written certification by qualified Arborist in Rhode Island to the Owner’s Representative that trees indicated to remain have been protected during the course of construction in accordance with recognized standards of the industry. Also certify that where damage did occur trees were promptly and properly treated. Indicate which damaged trees, if any, are incapable of retaining full growth potential and are recommended to be removed and replaced.

1.5 JOB CONDITIONS

A. Temporary Protections: Provide temporary fencing, barricades or guards to protect trees and other plants, which are to remain, from damage.

B. Protect Root Systems: The contractor shall not store construction materials, debris or excavated material within drip line (outer perimeter of branches). The contractor shall not permit vehicles within drip line. The Contractor shall restrict foot traffic to prevent excessive compaction of soil over root systems.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Drainage Crushed Stone: Selected stone or gravel, graded to pass criteria established in Section 31 00 00 - Earthwork.

B. New Topsoil: Fertile, friable, surface soil, containing natural loam. Refer to Preparation for planting beds 32 93 01 – Trees, Shrubs and Groundcover.

PART 3 - EXECUTION

3.1 GENERAL

A. Protect tree root systems from damage due to noxious materials and solution caused by run-off or spillage during mixing and placement of construction materials, or drainage from stored materials. Protect root systems from flooding, erosion or excessive wetting resulting from dewatering operations.

B. Do not allow fires under or adjacent to trees or other plants which are to remain.

C. Remove branches from trees that are to remain, if required and authorized by the Landscape Architect to clear for new construction.
   1. Where directed by Landscape Architect, extend pruning operation to restore natural shape of entire tree.

D. Cut branches and roots, where required, with sharp pruning instruments; do not break or chop.

3.2 EXCAVATION AROUND TREES

A. Excavate within drip line of trees only where indicated.

B. Where trenching for utilities is required within drip line, tunnel under or around roots by hand digging. Do not cut main lateral roots or tap roots; cut only smaller roots which interfere with installation of new work. Cut roots with sharp pruning instruments; do not break or chop.

C. Where excavating for new construction is required within drip line of trees, hand excavate to minimize damage to root systems. Provide sheeting at excavations if required. Use narrow tine spading forks and comb soil to expose roots.
   1. Relocate roots in backfill areas wherever possible. If large, main lateral roots are encountered, expose beyond excavation limits, as required, to bend and relocate without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately 3" back from new construction

D. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover, or pack with peat moss and wrap with burlap. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with earth.

E. Prune branches to balance loss to root system caused by damage or cutting of root system.

3.3 GRADING AND FILLING AROUND TREES

A. Maintain existing grade within drip line of trees, unless otherwise indicated.

B. Lowering Grades: Where existing grade is above new finish grade shown around trees, carefully hand excavate within drip line to new finish grade. Cut roots exposed by excavation or provide permanent protections as recommended by Arborist.
   1. Prune branches to stimulate root growth and to compensate for loss of roots. Provide subsequent maintenance during the contract period as recommended by Arborist. Provide Owner with typed instructions for recommended long-range maintenance procedures to be followed after completion of construction operations.

C. Raising Grades:
   1. Minor Fills: Where existing grade is 6" or less below elevation of finish grade shown, use topsoil fill material specified. Place in single layer and do not compact; hand grade to required finish elevations.
   2. Moderate Fills: Where existing grade is more than 6", but less than 12" below finish grade elevation, place a layer of drainage fill on existing grade prior to placing topsoil. Carefully place against trunk of tree approximately 2" above finish grade elevation and extend not less than 18" from tree trunk on all sides. For balance of area within drip line perimeter, place drainage fill to an elevation 6" below grade and complete fill with a layer of topsoil to finish grade elevation. Do not compact drainage fill or topsoil layers; hand grade to required elevations.

3.4 REPAIR AND REPLACEMENT OF TREES

A. Repair trees damaged by construction operations. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.

B. Remove and replace dead and damaged trees that are determined by Arborist to be incapable of

restoration to normal growth pattern.

1. Provide new trees of same size and species as those being replaced. Plant and maintain as specified under Section "Trees and Shrubs".

C. If trees over 6" in caliper measurement taken 12" above grade are required to be replaced, provide new trees of 6" caliper size, and of species selected by the Landscape Architect.

3.5 DISPOSAL

A. Burning on Owner's Property: Burning of removed trees and branches is not permitted on site.
B. Removal from Owner's Property: Remove excess excavation, displaced trees, and trimmings and legally dispose of off Owner's property unless otherwise indicated.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product

request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. Refer to other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:

    a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
    b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

    a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
    b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

    1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
3. Section 078413 "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.2 INFORMATIONAL SUBMITTALS

A. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.

B. Landfill Receipts: If required, submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

C. Certified Surveys: If required, Submit three copies signed by professional engineer.

D. Final Property Survey: Submit 3 copies showing the Work performed and record survey data.

1.3 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

    a. Exterior Masonry Load Bearing and Veneer Construction.

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a professional engineer to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and site work.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.

2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements"

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:
1. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.

5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in heat and other utilities.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements, including touchup painting.

10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Submit list of incomplete items in the following format:

    a. MS Excel electronic file. Architect will return annotated copy.
    b. PDF electronic file. Architect will return annotated copy.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual. Contractor to incorporate any required information within the Close Out Procedures & Documents List for Rhode Island Capital Projects.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits caused by work performed on site.
c. Remove tools, construction equipment, machinery, and surplus material from Project site.
d. Remove snow and ice to provide safe access to building.
e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
g. Sweep concrete floors broom clean in unoccupied spaces.
h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
j. Remove labels that are not permanent.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

   a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specification
   3. Record Product Data

B. Related Requirements:

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

   1. Number of Copies: Submit 3 complete sets of so called “As-Built” or “Record’ drawings to the Architect prior to the conclusion of the construction phase and prior to final payment provided that necessary subcontractors have timely provided adequate and accurate as-built drawings to the contractor.

      a. Initial Submittal:
         1) Submit record digital data files and 2 set(s) of plots.
         2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

      b. Final Submittal:
         1) Submit PDF electronic files of scanned record prints and three set(s) of prints.
         2) Submit electronic ‘Autocad’ .DWG files in version no later than 2009. Project filing and set up is to reflect PDF version, as listed above, that can be easily accessed by the Department of Administration, Capital Project and any potential consultants required to utilize .DWG files.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.

   1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data,

whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Record data as soon as possible after obtaining it.
c. Record and check the markup before enclosing concealed installations.

2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Refer instances of uncertainty to Architect for resolution.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

4. Note related Change Orders and record Drawings where applicable.

B. Format: Submit record Specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.

2.4 PHOTOGRAPIC DOCUMENTATION

A. Provide clearly marked and detailed plans with locations of key photographs showing construction progress, installation of systems behind concealed areas. Include photographs of system layouts, framing conditions and key components of construction.

B. Format: Submit record Product Data PDF electronic file(s).

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 017910 - INSPECTIONS & CERTIFICATIONS

PART 1 GENERAL

1.01 GENERAL CONDITIONS

A. Division 1, General Requirements, is hereby made part of this section as fully as if repeated herein.

1.02 DESCRIPTION OF INSPECTIONS

A. ENERGY STAR Certification is required.

B. FORTIFIED HOME Hurricane Bronze Certification is required.

C. National Grid Rhode Island RNC Tier 1 Certification.

1.03 REFERENCES

A. International Residential Code (2012 Edition)

B. National Grid Rhode Island RNC Building Specifications.

C. Energy Star Thermal Enclosure Checklist

D. FORTIFIED HOME Technical Requirements New Home

1.04 SCOPE OF WORK AND DOCUMENTS

A. National Program Requirements ENERGY STAR Certified Homes, Version 3.1 (Rev. 08)

B. Water Management System Builder Requirements ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 08)

C. Submission of National Grid Rhode Island RNC Building Specifications Rhode Island Residential New Construction (RNC) Program 2016 Project Application & plans by Owner.

D. *Builder Agreement* form - by Owner.

E. Pre-construction meeting with Architect, Owner, Contractor & ENERGY STAR Project Coordinator

F. Contractor to coordinate all necessary inspections required by ENERGY STAR Homes.

G. Contractor to coordinate all necessary inspections required by FORTIFIED HOMES.

1.05 TESTS AND INSPECTIONS

A. Inspections

1. Contractor to schedule with Architect, Owner and ENERGY STAR Project Coordinator the following inspections, or as otherwise advised by ENERGY STAR Project Coordinator:
   a. Sub soil drainage
   b. Slab perimeter break
   c. Open frame inspection prior to insulation
   d. Insulation/pre-drywall inspection
   e. Duct tightness inspection/testing
   f. Final Inspection, Blower Door Test

2. Contractor to schedule with Architect, Owner and FORTIFIED HOME Evaluator all required inspections necessary for certification.
   a. All certification requirements must be documented prior to being concealed by finish materials. A complete photo file to be presented to the FORTIFIED Evaluator working on the project.
   b. Certification letters from a structural engineer will be required to satisfy the documentation requirements for outlooker framing, gable framing and bracing, porch/carport connections, chimney connections and load path design. Copies of these letters to be used can be obtained from IBHS or the FORTIFIED Evaluator.
   c. Cost of structural engineer fees for the inspections and the required letter(s) will be the responsibility of the Owner.

1.06 CERTIFICATION & EXECUTION

A. ENERGY STAR Home Certification to be issued by ENERGY STAR Project Coordinator when project all necessary requirements have been fulfilled and completed to reach certification.

B. Certification and project specifications to comply with ENERGY STAR Certification requirements in effect at the time of completion of the construction.

   1. Rater Design Review Checklist ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 08) must be fully completed and be in compliance with required standards for certification.
   2. HVAC Commissioning Checklist ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 08) must be fully completed and be in compliance with required standards for certification.

PART 2 ENERGY STAR REBATES

2.01 REBATES

A. Contractor shall be responsible in coordinating with the Energy Star Coordinator about any high efficiency equipment rebates with utility company. All rebates are to go to the Owner.

END OF SECTION 017910

Rhode Island Residential New Construction (RNC) Program
2016 Project Application

National Grid offers incentives and services to help you build an energy efficient home with lower operating costs, increased durability, comfort and safety. Higher incentives are offered for more efficient homes. Working in partnership with the builder, a certified HERS rater will assess the energy efficiency of the home and provide on-site verification services. Energy modeling will be used to verify compliance, allowing flexibility in meeting the Program requirements.

Benefits and Services include:

- HERS Rating
- ENERGY STAR® Homes Rating for projects seeking the Environmental Protection Agency (EPA) label
- Energy modeling & design review
- Complimentary ENERGY STAR bulbs and WaterSense® showerheads
- On-site trainings
- Energy code compliance documentation
- Performance incentives
- Submission of additional rebates for qualified heating and cooling equipment

Program Requirements

- Apply prior to insulation installation
- Meet the energy savings requirements of Tier 1, 2 or 3 (see Page 2)
- New construction homes must comply with sections 3 & 5 of the ENERGY STAR Thermal Enclosure Checklist (renovations must meet this requirement where applicable)
- Less than 5 ACH50 blower door test for new construction
- Duct leakage to outside less than 6 CFM/100 square feet for new duct systems
- Mechanical ventilation per either RI 2013 SBC or ASHRAE 62.2 2010
- All new combustion heating or domestic hot water equipment in the conditioned space must be sealed combustion, and existing atmospheric equipment must pass the RESNET CAZ test (unvented gas fireplaces will not be allowed)
- Contact the RNC Project Manager and allow access to the unit after insulation and prior to sheetrock and again at the completion of the project for testing. (5 days notice required)
- Ducted A/C systems must be sized in accordance with ACCA Manual J and S

To Apply

1. **Complete 2016 Project Application:** Review the RNC Program Requirements and Terms and Conditions. Verify the equipment to be installed. Work with the RNC Project Manager to ensure accuracy of project specifications.
2. **Submit Plans and 2016 Project Application to Program:** Email Cara.Russell@clearesult.com or call 888-887-8841 for instructions.
3. **Plans Review:** The RNC Project Manager will review the plans and verify that you selected the appropriate Tier to qualify your home for the RNC Program. If the home does not meet the selected Tier requirements, upgrade options will be presented in consultation with the program applicant. Up to five hours are allocated to conduct the plans review and provide upgrade options. Consulting requested beyond the five hour allocation is available at $135/hour.
4. **Site Visits:** Site visits are typically conducted: (1) after insulation, before drywall; and (2) when the home is complete (mechanical systems are operating). The purpose of these site visits is to verify that the home is built to the agreed specifications and meets Program standards. Additional site visits may be necessary and will be determined by the Project Manager.
5. **Certifications and Incentives:** Upon successful completion of site visits the Project Manager will process RNC Program and ENERGY STAR Homes (if qualified) paperwork. Units that meet the ENERGY STAR Homes standards will receive the EPA's label of qualification. Incentives offered by National Grid will be processed at this time.

2016 APPLICATION FORM Customer and Project Information

Project Name and Site Address	Incentive Recipient (if different than participant)
Participant (Contact & Company)	Company
Address	Address
City, State, Zip	City, State, Zip
Phone Number	Phone Number
Email	Email
SS# or Federal ID#	SS# or Federal ID#

Primary Heating Source: □ Electric □ Natural Gas □ Oil □ Propane	Primary Domestic Hot Water Source: □ Electric □ Natural Gas □ Oil □ Propane	Master Metered Natural Gas: □ Yes □ No Master Metered Electric: □ Yes □ No
Applying for ENERGY STAR® Certification? □ Yes □ No	Pursuing Green Certification: □ Yes □ No	Number of Floors In Building: _____
New Construction □ Renovation/Rehabilitation □	Affordable Project: □ Yes □ No	Check here to receive complimentary: □ WaterSense® showerheads □ ENERGY STAR bulbs
Mechanical Ventilation Is Required Type: □ Exhaust Only □ Supply only □ Balanced	Ventilation Manufacturer and Model: _____	Ventilation Control: □ Timer □ Variable Speed □ Internal

2016 RNC Performance Incentives

Tier Level	% more efficient than baseline*	1-4 Unit Building	5-10 Unit Building	11-30 Unit Building	31-50 Unit Building
Tier 1	15%-30%	$500 per unit	$300 per unit	$250 per unit	$200 per unit
Tier 2	31%-44%	$1,500 per unit	$1,000 per unit	$750 per unit	$500 per unit
Tier 3	45% or more	$4,000 per unit	$2,000 per unit	$1,500 per unit	$1,000 per unit
ENERGY STAR Label (additional)		$200 per unit	$150 per unit	$100 per unit	$100 per unit

*The results of the Rhode Island 2011 Baseline Study informed the new construction baseline home. For renovations and rehabs, the baseline is the existing home plus code required improvements. See Program Requirements and Terms and Conditions for additional prerequisites.

2016 RI RNC Performance Incentive Application

The RNC Program offers performance-based incentives based on the overall savings achieved by the home. Please select the Tier Level you plan to achieve based on the table provided, and indicate whether you want to apply for the additional ENERGY STAR incentive. Buildings with more than 50 units are eligible for custom incentives.

Incentive	1-4 Unit Building	5-10 Unit Building	11-30 Unit Building	31-50 Unit Building	Total Incentive
Tier 1					$
Tier 2					$
Tier 3					$
ENERGY STAR					$

2016 High Efficiency Residential Electrical Equipment Rebates

As an added benefit participants will receive incentives for eligible high efficiency electrical equipment directly from the RNC Program, instead of having to apply separately to RI CoolSmart. The rebates for this equipment may not be combined with any other offers from National Grid. All terms and conditions of the National Grid Rebate Programs must be met in order to qualify and are found on the cooling and heat pump rebate forms located on National Grid's website. **Projects with 10 or more housing units will receive 100% of the equipment rebates for the first 10 systems installed and 50% for the remaining systems.**

Qualifying Equipment	SEER	EER	HSPF	Rebate (Systems 1-10)	Quantity	Rebate (Systems 11+)	Quantity	Total Rebates
Central AC	≥ 16	≥ 13	n/a	$250		$125		$
Central Heat Pump	≥ 16	n/a	≥ 8.5	$250		$125		$
Central Heat Pump	≥ 18	n/a	≥ 9.6	$500		$250		$
Mini-Split Heat Pump	≥ 18	n/a	≥ 9	$250		$125		$
Mini-Split Heat Pump	≥ 20	n/a	≥ 11	$500		$250		$
Specialized Products								
Wi-Fi Enabled Thermostat (rebate not to exceed purchase price)		Maximum of 2 per home		$50		$25		$
Heat Pump Water Heater (see National Grid's website for qualifying models)				$750		$375		$

2016 High Efficiency Residential Gas Equipment Rebates

As an added benefit participants will receive incentives for eligible natural gas high efficiency heating and hot water equipment directly from the RNC Program, instead of having to apply separately to RI Gas Heat. The rebates for this equipment may not be combined with any other offers from National Grid. All terms and conditions of the National Grid Rebate Programs must be met in order to qualify and can be found on the gas equipment rebate forms located on National Grid's website.
Projects with 10 or more housing units will receive 100% of the equipment rebates for the first 10 systems installed and 50% for the remaining systems.

Qualifying Equipment (Energy Star Qualified)	Specs	Rebate (Systems 1-10)	Quantity	Rebate (Systems 11+)	Quantity	Total Rebates
Hot water boiler	≥ 95% AFUE	$700		$350		$
Combined condensing boiler and on-demand water heating unit	≥ 95% AFUE	$1,000		$500		$
Combined condensing boiler and on-demand water heating unit	≥ 90% AFUE	$500		$250		$
Warm air furnace	≥ 95% AFUE w/ ECM	$300		$150		$
On-demand tankless water heater	≥ .94 EF w/ electronic ignition	$400		$200		$
Condensing gas water heater	≥ 95% Thermal Efficiency (TE)	$150		$75		$
ENERGY STAR® certified storage water heater	≥ .67 EF	$100		$50		$
Specialized Products In Natural Gas Heated Homes						
Wi-Fi Enabled Thermostat (rebate not to exceed purchase price)	Maximum of 2 per home	$50		$25		$
After-market boiler reset control Add on unit attached to a natural gas non-condensing forced hot water boiler. This technology automatically reduces the boiler hot water temperature on mild days when heating loads are lighter.		$100		$50		$
Boiler load control Senses the heating demand on the boiler and resets the water temperature based on the demand		$25		$12.50		$
Electronically Commutated Motor (ECM) Pump See the gas equipment rebate form for qualifying pumps		$100		$50		$
Heat Recovery Ventilator A factory-assembled, packaged unit including fans or blowers that transfer heat between two isolated air streams. This technology recovers up to 80% of the heated air exiting your home and delivers that heat to the cold incoming air from outside. Portable units excluded.		$250		$125		$

Terms and Conditions

Residential incentives are available to eligible participants building in a Rhode Island National Grid electric and/or gas territory. A Project Manager from CLEAResult must approve this Application. The project must meet the minimum requirements set forth by the Project Manager in order to be eligible for the approved rebates and incentives. All units must meet the requirements set forth in this Application. Some restrictions may apply. National Grid incentives are subject to change or cancellation without notice. Units must be complete and inspected prior to Dec. 31 2016 in order to be eligible for incentives. Projects with greater than 10 units require pre-approval from National Grid for incentive eligibility. National Grid and CLEAResult do not endorse, guarantee or warrant any particular contractor, manufacturer or product installation. National Grid and CLEAResult do not make any representation of any kind regarding the results achieved by the home or equipment or the adequacy or safety of the home or equipment. Payment of incentives is contingent upon all Program requirements being met. Testing, inspections and verification of requirements will be performed by CLEAResult solely to verify compliance with Program requirements. National Grid is entitled to 100% of the energy benefits associated with this project, excluding the value of the realized energy cost savings. Units that are not ready for a scheduled inspection or require additional inspections due to failures may be subject to a $175 fee.

Acceptance of Agreement

A signature below indicates the participant understands that all Program Requirements (page 1) must be met in order to qualify for incentives through the Rhode Island RNC Program. Any proposed specification changes must be communicated to the Project Manager, as such changes may render the project ineligible for incentives. The signature does not bind the Participant to participate in the Program.

Participant Signature (Required)	Print Name	Date

National Program Requirements
ENERGY STAR Certified Homes, Version 3.1 (Rev. 08)

Eligibility Requirements

The following homes are eligible to earn the ENERGY STAR:

- Detached dwelling units [1] (e.g. single family homes); OR
- Dwelling units [1] in any multifamily building with 4 units or fewer; OR
- Dwelling units [1] in multifamily buildings with 3 stories or fewer above-grade [2,3]; OR
- Dwelling units [1] in multifamily buildings with 4 or 5 stories above-grade [2,3] that have their own heating, cooling, and hot water systems [4], separate from other units, and where dwelling units occupy 80% or more of the occupiable [3] square footage of the building [5]. When evaluating mixed use buildings for eligibility, exclude commercial / retail space when assessing whether the 80% threshold has been met.

Dwelling units [1] in multifamily buildings that are not eligible to earn the ENERGY STAR through the Certified Homes Program may be eligible through the Multifamily High Rise Program. For more information, visit: www.energystar.gov/mfhr/eligibility

Note that compliance with these requirements is not intended to imply compliance with all local code requirements that may be applicable to the home to be built. [6]

Partnership, Training, and Credentialing Requirements

Builders, Raters, and HVAC contractors must meet the following requirements prior to certifying homes:

- Builders are required to sign an ENERGY STAR Partnership Agreement and complete the online Version 3 Builder Orientation, which can be found at www.energystar.gov/homesPA.
- HVAC installing contractors are required to be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO). An explanation of this process can be found at www.energystar.gov/newhomesHVAC.
- Raters and Field Inspectors are required to complete training, which can be found at www.energystar.gov/newhomestraining.

ENERGY STAR Certification Process [7]

1. The certification process provides flexibility to select a custom combination of measures for each home that is equivalent in performance to the minimum requirements of the ENERGY STAR Reference Design Home, Exhibit 1, as assessed through energy modeling. Use a RESNET-accredited Home Energy Rating software program to determine the ENERGY STAR HERS Index Target, which is the highest numerical HERS Index value that each rated home may achieve to earn the ENERGY STAR. [8]
2. Using the same software program, configure the preferred set of efficiency measures for the home to be certified and verify that the resulting HERS Index meets or exceeds the ENERGY STAR HERS Index Target, as determined in Step 1.

   Note that, regardless of the measures selected, the Mandatory Requirements for All Certified Homes in Exhibit 2 are also required and impose certain constraints on the efficiency measures selected (e.g., insulation levels, insulation installation quality, window performance, duct leakage). Furthermore, on-site power generation may only be used to meet the ENERGY STAR HERS Index Target for homes that are larger than the Benchmark Home and only for the incremental change in the ENERGY STAR HERS Index Target caused by the Size Adjustment Factor. [9]
3. Construct the home using the measures selected in Step 2 and the Mandatory Requirements for All Certified Homes, Exhibit 2.
4. Using a Rater, verify that all requirements have been met in accordance with the Mandatory Requirements for All Certified Homes and with RESNET's On-Site Inspection Procedures for Minimum Rated Features. [10] The Rater is required to keep electronic or hard copies of the completed and signed Rater checklists and the HVAC Design Report.

   The Rater must review all items on the Rater checklists. Raters are expected to use their experience and discretion to verify that the overall intent of each inspection checklist item has been met (i.e., identifying major defects that undermine the intent of the checklist item versus identifying minor defects that the Rater may deem acceptable).

   In the event that a Rater finds an item that is inconsistent with the intent of the checklists, the home cannot earn the ENERGY STAR until the item is corrected. If correction of the item is not possible, the home cannot earn the ENERGY STAR. In the event that an item on a Rater checklist cannot be inspected by the Rater, the home also cannot earn the ENERGY STAR. The only exceptions to this rule are in the Thermal Enclosure System Section of the Rater Field Checklist, where the builder may assume responsibility for verifying a maximum of eight items. This option shall only be used at the discretion of the Rater. When exercised, the builder's responsibility will be formally acknowledged by the builder signing the checklist for the item(s) that they verified.

   In the event that a Rater is not able to determine whether an item is consistent with the intent (e.g., an alternative method of meeting a checklist requirement has been proposed), then the Rater shall consult their Provider. If the Provider also cannot make this determination, then the Rater or Provider shall report the issue to EPA prior to project completion at: energystarhomes@energystar.gov and will typically receive an initial response within 5 business days. If EPA believes the current program requirements are sufficiently clear to determine whether the intent has been met, then this guidance will be provided to the partner and enforced beginning with the house in question. In contrast, if EPA believes the program requirements require revisions to make the intent clear, then this guidance will be provided to the partner but only enforced for homes permitted after a specified transition period after the release of the revised program requirements, typically 60 days in length.

   This process will allow EPA to make formal policy decisions as partner questions arise and to disseminate these policy decisions through the periodic release of revised program documents to ensure consistent application of the program requirements.

Exhibit 1: ENERGY STAR Reference Design Home

The ENERGY STAR Reference Design Home is the set of efficiency features modeled to determine the ENERGY STAR HERS Index Target for each home pursuing certification. Therefore, while the features below are not mandatory, if they are not used then other measures will be needed to achieve the ENERGY STAR HERS Index Target. In addition, note that the Mandatory Requirements for All Certified Homes, Exhibit 2, contain additional requirements such as total duct leakage limits, minimum allowed insulation levels, and minimum allowed fenestration performance. Therefore, EPA recommends that partners review the documents in Exhibit 2 prior to selecting measures.

Hot Climates (2009 IECC Zones 1,2,3) [12]	**Mixed and Cold Climates** (2009 IECC Zones 4,5,6,7,8) [12]
Cooling Equipment (Where Provided)	
• Cooling equipment modeled at the applicable efficiency levels below:	
• 15 SEER / 12 EER AC, • Heat pump (See Heating Equipment)	• 13 SEER AC, • Heat pump (See Heating Equipment)
Heating Equipment	
• Heating equipment modeled at the applicable efficiency levels below, dependent on fuel and system type:	

• Gas furnace, efficiency as follows:
  • *CZ 1 & 2:* 80 AFUE,
  • *CZ 3:* 90 AFUE, ENERGY STAR certified,
• 80 AFUE oil furnace,
• 80 AFUE boiler,
• 8.2 HSPF / 15 SEER / 12 EER air-source heat pump with electric or dual-fuel backup
	• 95 AFUE ENERGY STAR gas furnace,
	• 85 AFUE ENERGY STAR oil furnace,
	• 90 AFUE ENERGY STAR gas boiler,
	• 86 AFUE ENERGY STAR oil boiler,
	• Heat pump, with efficiency as follows:
	• *CZ 4:* 8.5 HSPF / 15 SEER / 12 EER air-source w/ electric or dual-fuel backup,
	• *CZ 5:* 9.25 HSPF / 15 SEER / 12 EER air-source w/ electric or dual-fuel backup,
	• *CZ 6:* 9.5 HSPF / 15 SEER / 12 EER air-source w/ electric or dual-fuel backup,
	• CZ 7-8: 3.6 COP / 17.1 EER ground-source w/ electric or dual-fuel backup

Envelope, Windows, & Doors

- Insulation levels modeled to 2012 IECC levels and Grade I installation per RESNET standards.
- Infiltration rates modeled as follows:

4 ACH50 in CZs 1,2	3 ACH50 in CZs 3,4,5,6,7,8

- ENERGY STAR windows and doors modeled, as illustrated below:

Window U-Value:	0.40 in CZs 1,2	0.30 in CZ 3	0.30 in CZ 4	0.27 in CZs 5,6,7,8
Window SHGC:	0.25 in CZs 1,2	0.25 in CZ 3	0.40 in CZ 4	Any in CZs 5,6,7,8

Door U-Value:	Opaque: 0.17	≤½ lite: 0.25	>½ lite: 0.30
Door SHGC:	Opaque: Any	≤½ lite: 0.25	>½ lite: 0.25 in CZs 1,2,3; 0.40 in CZs 4,5,6,7,8

Water Heater

- DHW equipment modeled with the following efficiency levels as applicable:

Gas:	30 Gal = 0.63 EF	40 Gal = 0.61 EF	50 Gal = 0.59 EF	60 Gal = 0.57 EF	70 Gal = 0.55 EF	80 Gal = 0.53 EF
Electric:	30 Gal = 0.94 EF	40 Gal = 0.93 EF	50 Gal = 0.92 EF	60 Gal = 0.91 EF	70 Gal = 0.90 EF	80 Gal = 0.89 EF
Oil:	30 Gal = 0.55 EF	40 Gal = 0.53 EF	50 Gal = 0.51 EF	60 Gal = 0.49 EF	70 Gal = 0.47 EF	80 Gal = 0.45 EF

Thermostat & Ductwork

- Programmable thermostat modeled.
- All ducts and air handlers modeled within conditioned space.

Lighting & Appliances

- ENERGY STAR refrigerators, dishwashers, and ceiling fans modeled.
- ENERGY STAR light bulbs modeled in 90% of RESNET-defined Qualifying Light Fixture Locations.

Exhibit 2: Mandatory Requirements for All Certified Homes

Party Responsible	Mandatory Requirements
Rater	• Completion of Rater Design Review Checklist • Completion of Rater Field Checklist
HVAC System Designer	• Completion of HVAC Design Report
HVAC Installing Contractor	• Completion of HVAC Commissioning Checklist
Builder	• Completion of Water Management System Builder Requirements

Exhibit 3: Benchmark Home [9]

Bedrooms in Home to be Built	0	1	2	3	4	5	6	7	8
Conditioned Floor Area Benchmark Home	1,000	1,000	1,600	2,200	2,800	3,400	4,000	4,600	5,200

Effective Date

EPA intends to implement the Version 3.1 program requirements for homes permitted starting one year after state-level implementation of the 2012 IECC or an equivalent code. However, EPA will make a final determination of the implementation timeline on a state-by-state basis. Exhibit 4 defines the Version 3.1 implementation timeline for states where EPA has made this determination. Homes permitted prior to the implementation timeline are eligible to earn the ENERGY STAR under Version 3 of the program requirements.

Note that regional program requirements and associated implementation schedules have been developed for homes in CA, FL, GU, HI, the Northern Mariana Islands, and PR.

Exhibit 4: ENERGY STAR Certified Homes Version 3.1 Implementation Timeline

State	Applicable to Homes with the Following Permit Date
MA	On or after 01/01/2015
DC, IL, MD, RI	On or after 04/01/2015 (except for Calvert County and St. Mary's County in MD, for which the applicable permit date is on or after 07/01/2015)
IA	On or after 06/01/2015
DE	On or after 12/01/2015
MT,OR, WA	On or after 01/01/2016
MN, VT	On or after 04/01/2016
NV	On or after 07/01/2016
NJ	On or after 04/01/2017
TX	On or after 10/01/2017

Notes:

1. A dwelling unit, as defined by the 2012 IECC, is a single unit that provides complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.
2. Any above-grade story with 20% or more occupiable space, including commercial space, shall be counted towards the total number of stories for the purpose of determining eligibility to participate in the program. The definition of an 'above-grade story' is one for which more than half of the gross surface area of the exterior walls is above-grade. All below-grade stories, regardless of type, shall not be included when evaluating eligibility.
3. Per ASHRAE 62.2-2010, occupiable space is any enclosed space inside the pressure boundary and intended for human activities or continual human occupancy, including, but not limited to, areas used for living, sleeping, dining, and cooking, toilets, closets, halls, storage and utility areas, and laundry areas.
4. Central domestic hot water systems are allowed if solar energy provides ≥ 50% of the domestic hot water for the residential units.
5. Units in multifamily buildings with 4 or 5 stories above-grade, including mixed use buildings, that have their own heating, cooling, & hot water systems, separate from other units, *but where dwelling units occupy < 80%* of the residential (i.e., excluding commercial / retail space for mixed-use buildings) occupiable square footage of the building may earn the ENERGY STAR through either the

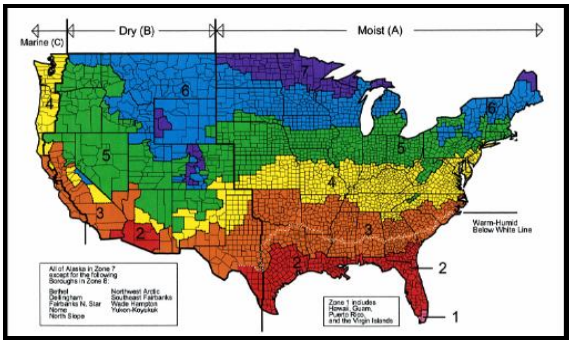
Certified Homes Program or the Multifamily High Rise (MFHR) Program if permitted prior to July 1, 2012. Units in buildings of this type that are permitted after this date shall only be eligible to earn the ENERGY STAR through the MFHR Program.

6. Where requirements of the local codes, manufacturers' installation instructions, engineering documents, or regional ENERGY STAR programs overlap with the requirements of these guidelines, EPA offers the following guidance:
   a. Where the overlapping requirements exceed the ENERGY STAR guidelines, these overlapping requirements shall be met;
   b. Where overlapping requirements conflict with a requirement of the ENERGY STAR program (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these program requirements shall not be met. Certification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement (e.g., switching from exterior to interior slab edge insulation). Note that a home must still meet its ENERGY STAR HERS Index Target. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement.
7. Prior to Rev. 06, homes were permitted to be certified using either a Prescriptive Path or a Performance Path. Homes with a permit date on or after 09/01/2015 shall only use the Performance Path, which has been renamed the ENERGY STAR Certification Process. To minimize disruption to projects that are in process, homes with a permit date before 09/01/2015 are permitted to use a modified version of the Prescriptive Path in lieu of the Performance Path. For more information about this compliance option, visit: www.energystar.gov/v31prescriptivepath.
8. The software program shall automatically determine (i.e., without relying on a user-configured ENERGY STAR Reference Design) this target for each rated home by following the ENERGY STAR HERS Index Target Procedure, Version 3.1, available on EPA's website.
9. The average-size home with a specific number of bedrooms is termed the "Benchmark Home". The conditioned floor area of a Benchmark Home ($CFA_{Benchmark\ Home}$) is determined by selecting the appropriate value from Exhibit 3. For homes with more than 8 bedrooms, the $CFA_{Benchmark\ Home}$ shall be determined by multiplying 600 sq. ft. by the total number of bedrooms & adding 400 sq. ft.

   A bedroom is defined by RESNET as a room or space 70 sq. ft. or greater size, with egress window and closet, used or intended to be used for sleeping. A "den", "library", or "home office" with a closet, egress window, and 70 sq. ft. or greater size or other similar rooms shall count as a bedroom, but living rooms and foyers shall not.

   An egress window, as defined in 2012 IRC section R310, shall refer to any operable window that provides for a means of escape and access for rescue in the event of an emergency. The egress window definition has been summarized for convenience. The egress window shall:
   - have a sill height of not more than 44 in. above the floor; AND
   - have a minimum net clear opening of 5.7 sq. ft.; AND
   - have a minimum net clear opening height of 24 in.; AND
   - have a minimum net clear opening width of 20 in.; AND
   - be operational from the inside of the room without the use of keys, tools or special knowledge.
10. The term 'Rater' refers to the person completing the third-party inspections required for certification. This person shall: a) be a certified Home Energy Rater, Rating Field Inspector, or an equivalent designation as determined by a Verification Oversight Organization such as RESNET; and, b) have attended and successfully completed an EPA-recognized training class. See www.energystar.gov/newhomestraining.

    Raters who operate under a Sampling Provider are permitted to verify the Minimum Rated Features of the home and to verify any Checklist Item designated "Rater Verified" using the RESNET-approved sampling protocol for homes outside California, and the CEC-approved sampling protocol for homes in CA. No parties other than Raters are permitted to use sampling. All other items shall be verified for each certified home. For example, no items on the HVAC Commissioning Checklist are permitted to be verified using a sampling protocol.
11. In States that have a v3.1 implementation timeline, per Exhibit 4, this Revision of the National Program Requirements is required to certify all homes permitted after 07/01/2016, but is allowed to be used for any home permitted or completed prior to this date. The Rater may define the 'permit date' as either the date that the permit was issued or the date of the contract on the home. In cases where permit or contract dates are not available, Providers have discretion to estimate permit dates based on other construction schedule factors. These assumptions should be both defensible and documented.
12. The following map illustrates the Climate Zone boundaries as defined by the 2012 IECC Figure R301.1.



Water Management System Builder Requirements[1]
ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 08)

Builder Responsibilities:

- It is the exclusive responsibility of builders to ensure that each certified home is constructed to meet these requirements.
- While builders are not required to maintain documentation demonstrating compliance for each individual certified home, builders are required to develop a process to ensure compliance for each certified home (e.g., incorporate these requirements into the Scope of Work for relevant sub-contractors, require the site supervisor to inspect each home for these requirements, and / or sub-contract the verification of these requirements to a Rater).
- In the event that the EPA determines that a certified home was constructed without meeting these requirements, the home may be decertified.

1. Water-Managed Site and Foundation
1.1 Patio slabs, porch slabs, walks, and driveways sloped ≥ 0.25 in. per ft. away from home to edge of surface or 10 ft., whichever is less. [2]
1.2 Back-fill has been tamped and final grade sloped ≥ 0.5 in. per ft. away from home for ≥ 10 ft. See Footnote for alternatives. [2]
1.3 Capillary break beneath all slabs (e.g., slab on grade, basement slab) except crawlspace slabs using either: ≥ 6 mil polyethylene sheeting, lapped 6-12 in., or ≥ 1 in. extruded polystyrene insulation with taped joints. [3, 4, 5]
1.4 Capillary break at all crawlspace floors using ≥ 6 mil polyethylene sheeting, lapped 6-12 in., & installed using one of the following: [3, 4, 5]
1.4.1 Placed beneath a concrete slab; OR,
1.4.2 Lapped up each wall or pier and fastened with furring strips or equivalent; OR,
1.4.3 Secured in the ground at the perimeter using stakes.
1.5 Exterior surface of below-grade walls of basements & unvented crawlspaces finished as follows: a) For poured concrete, masonry, & insulated concrete forms, finish with damp-proofing coating. [6] b) For wood framed walls, finish with polyethylene and adhesive or other equivalent waterproofing.
1.6 Class 1 vapor retarder not installed on interior side of air permeable insulation in exterior below-grade walls. [7]
1.7 Sump pump covers mechanically attached with full gasket seal or equivalent.
1.8 Drain tile installed at basement and crawlspace walls, with the top of the drain tile pipe below the bottom of the concrete slab or crawlspace floor. Drain tile surrounded with ≥ 6 in. of ½ to ¾ in. washed or clean gravel and with gravel layer fully wrapped with fabric cloth. Drain tile level or sloped to discharge to outside grade (daylight) or to a sump pump. If drain tile is on interior side of footing, then channel provided through footing to exterior side. [8]
2. Water-Managed Wall Assembly
2.1 Flashing at bottom of exterior walls with weep holes included for masonry veneer and weep screed for stucco cladding systems, or equivalent drainage system. [9]
2.2 Fully sealed continuous drainage plane behind exterior cladding that laps over flashing in Item 2.1 and fully sealed at all penetrations. Additional bond-break drainage plane layer provided behind all stucco and non-structural masonry cladding wall assemblies. [9, 10]
2.3 Window and door openings fully flashed. [11]
3. Water-Managed Roof Assembly
3.1 Step and kick-out flashing at all roof-wall intersections, extending ≥ 4" on wall surface above roof deck and integrated shingle-style with drainage plane above; boot / collar flashing at all roof penetrations. [12]
3.2 For homes that don't have a slab-on-grade foundation and do have expansive or collapsible soils, gutters & downspouts provided that empty to lateral piping that discharges water on sloping final grade ≥ 5 ft. from foundation, or to underground catchment system not connected to the foundation drain system that discharges water ≥ 10 ft. from foundation. See Footnote for alternatives & exemptions. [3, 13, 14]
3.3 Self-adhering polymer-modified bituminous membrane at all valleys & roof deck penetrations. [3, 15]
3.4 In 2009 IECC Climate Zones 5 & higher, self-adhering polymer-modified bituminous membrane over sheathing at eaves from the edge of the roof line to > 2 ft. up roof deck from the interior plane of the exterior wall. [3, 15]
4. Water-Managed Building Materials
4.1 Wall-to-wall carpet *not* installed within 2.5 ft. of toilets, tubs, and showers.
4.2 Cement board or equivalent moisture-resistant backing material installed on all walls behind tub and shower enclosures composed of tile or panel assemblies with caulked joints. Paper-faced backerboard shall not be used. [16]
4.3 In Warm-Humid climates, Class 1 vapor retarders not installed on the interior side of air permeable insulation in above-grade walls, except at shower and tub walls. [7]
4.4 Building materials with visible signs of water damage or mold *not* installed or allowed to remain. [17]
4.5 Framing members & insulation products having high moisture content *not* enclosed (e.g., with drywall). [18]
4.6 For each condensate-producing HVAC component, corrosion-resistant drain pan (e.g., galvanized steel, plastic) included that drains to a conspicuous point of disposal in case of blockage. Backflow prevention valve included if connected to a shared drainage system.

Footnotes:

1. These requirements are designed to improve moisture control in homes. However, these features alone cannot prevent all moisture problems. For example, leaky pipes or overflowing baths can lead to moisture issues and negatively impact the performance of the home.
2. Swales or drains designed to carry water from foundation are permitted to be provided as an alternative to the slope requirements for any home, and shall be provided for a home where setbacks limit space to less than 10 ft. Also, tamping of back-fill is not required if either: proper drainage can be achieved using non-settling compact soils, as determined by a certified hydrologist, soil scientist, or engineer; OR, the builder has scheduled a site visit to provide in-fill and final grading after settling has occurred (e.g., after the first rainy season).

3. Not required in Dry (B) climates as shown in 2009 IECC Figure 301.1 and Table 301.1.
4. Not required for raised pier foundations with no walls. To earn the ENERGY STAR, EPA recommends, but does not require, that radon-resistant features be included in homes built in EPA Radon Zones 1, 2 & 3. For more information, see www.epa.gov/indoorairplus.
5. For an existing slab (e.g., in a home undergoing a gut rehabilitation), in lieu of a capillary break beneath the slab, a continuous and sealed Class I or Class II Vapor Retarder (per Footnote 7) is permitted to be installed on top of the entire slab. In such cases, up to 10% of the slab surface is permitted to be exempted from this requirement (e.g., for sill plates). In addition, for existing slabs in occupiable space, the Vapor Retarder shall be, or shall be protected by, a durable floor surface. If Class I Vapor Retarders are installed, they shall not be installed on the interior side of air permeable insulation or materials prone to moisture damage.
6. Interior surface of an existing below-grade wall (e.g., in a home undergoing a gut rehab.) listed in Item 1.5a is permitted to be finished by:
   - Installing a continuous and sealed drainage plane, capillary break, Class I Vapor Retarder (per Footnote 7) and air barrier that terminates into a foundation drainage system as specified in Item 1.8; OR
   - If a drain tile is not required as specified in Footnote 8, adhering a capillary break and Class I Vapor Retarder (per Footnote 7) directly to the wall with the edges taped/sealed to make it continuous.

   Note that no alternative compliance option is provided for existing below-grade wood-framed walls in Item 1.5b.
7. The 2009 IRC defines Class I vapor retarders as a material or assembly with a rating of ≤ 0.1 perm, using the desiccant method with Proc. A of ASTM E 96. The following materials are typically ≤ 0.1 perm and shall not be used on the interior side of air permeable insulation in above-grade exterior walls in warm-humid climates or below-grade exterior walls in any climate: rubber membranes, polyethylene film, glass, aluminum foil, sheet metal, and foil-faced insulating / non-insulating sheathings. These materials can be used on the interior side of walls if air permeable insulation is not present (e.g., foil-faced rigid foam board adjacent to a below-grade concrete foundation wall is permitted).

   Note that this list is not comprehensive and other materials with a perm rating ≤ 0.1 also shall not be used. Also, if mfr. spec.'s for a product indicate a perm rating ≥ 0.1, then it may be used, even if it is in this list. Also note that open-cell and closed-cell foam generally have ratings above this limit and may be used unless mfr. spec.'s indicate a perm rating ≤ 0.1. Several exemptions to these requirements apply:
   - Class I vapor retarders, such as ceramic tile, may be used at shower and tub walls;
   - Class I vapor retarders, such as mirrors, may be used if mounted with clips or other spacers that allow air to circulate behind them.
8. Alternatively, either a drain tile that is pre-wrapped with a fabric filter or a Composite Foundation Drainage System (CFDS) that has been evaluated by ICC-ES per AC 243 are permitted to be used. Note that the CFDS must include a soil strip drain or another ICC-ES evaluated perimeter drainage system to be eligible for use. In an existing home (e.g, in a home undergoing a gut rehab.) a drain tile installed only on the interior side of the footing without a channel is permitted. Additionally, a drain tile is not required when a certified hydrologist, soil scientist, or engineer has determined that a crawlspace foundation, or an existing basement foundation (e.g., in a home undergoing a gut rehab.), is installed in Group I Soils (i.e. well-drained ground or sand-gravel mixtures), as defined by 2009 IRC Table R405.1.
9. These Items not required for existing structural masonry walls (e.g., in a home undergoing a gut rehabilitation). Note this exemption does not extend to existing wall assemblies with masonry veneers.
10. Any of the following systems may be used: a monolithic weather-resistant barrier (i.e., house wrap) shingled at horizontal joints and sealed or taped at all joints; weather resistant sheathings (e.g., faced rigid insulation) fully taped at all "butt" joints; lapped shingle-style building paper or felts; or other water-resistive barrier recognized by ICC-ES or other accredited agency.
11. Apply pan flashing over the rough sill framing, inclusive of the corners of the sill framing; side flashing that extends over pan flashing; and top flashing that extends over side flashing or equivalent details for structural masonry walls.
12. Intersecting wall siding shall terminate 1 in. above the roof or higher, per manufacturer's recommendations. Continuous flashing shall be installed in place of step flashing for metal and rubber membrane roofs.
13. The assessment of whether the soil is expansive or collapsible shall be completed by a certified hydrologist, soil scientist, or engineer.
14. Any of the following are permitted to be used as alternatives to Item 3.2: a) a roof design that deposits rainwater to a grade-level rock bed with a waterproof liner and a lateral drain pipe that meets discharge requirements per Item 3.2; b) a rainwater harvesting system that drains overflow to meet discharge requirements per Item 3.2; or c) a continuous rubber membrane (e.g. EPDM) that is aligned with the foundation wall from final grade to ≥ 8 in. below grade and then slopes ≥ 0.5 in. per ft. away from the home for at least 5 ft., with Group I Soils (as defined in Footnote 8) covering the membrane to within 3 in. of final grade.
15. As an alternative, any applicable option in 2009 IRC Section R905.2.8.2 is permitted to be used to meet Item 3.3 and any option in 2009 IRC Section R905.2.7.1 is permitted to be used to meet Item 3.4. EPA recommends, but does not require, that products meet ASTM D1970.
16. In addition to cement board, materials that have been evaluated by ICC-ES per AC 115 may also be used to meet this requirement. Monolithic tub and shower enclosures (e.g., fiberglass with no seams) are exempt from this backing material requirement unless required by the manufacturer. Paper-faced backerboard may only be used behind monolithic enclosures or waterproof membranes that have been evaluated by ICC-ES per AC 115, and then only if it meets ASTM mold-resistant standards ASTM D3273 or ASTM D6329.
17. If mold is present, effort should be made to remove all visible signs of mold (e.g., by damp wipe with water and detergent). If removal methods are not effective, then the material shall be replaced. However, stains that remain after damp wipe are acceptable. Lumber with "sap stain fungi" is exempt from this Item as long as the lumber is structurally intact.
18. For wet-applied insulation, follow manufacturer's drying recommendations. EPA recommends that lumber moisture content be ≤ 18%.
19. This Revision is required to certify all homes permitted after 07/01/2016, but can be used to certify any home permitted or completed prior to this date. The Rater may define the 'permit date' as either the date that the permit was issued or the date of the contract on the home. In cases where permit or contract dates are not available, Providers have discretion to estimate permit dates based on other construction schedule factors. These assumptions should be both defensible and documented.

FORTIFIED HOME

Technical Requirements Summary

New Residential, Single-Family Detached Homes

Hurricane

FORTIFIED HOME FORTIFIED HOME FORTIFIED HOME

FORTIFIED is a program of the Insurance Institute for Business & Home Safety

Insurance Institute for Business & Home Safety

FORTIFIED HOME™
Technical Requirements
New Home

INTRODUCTION

The Insurance Institute for Business & Home Safety's FORTIFIED Home™: Hurricane Standard helps homeowners in coastal areas strengthen their houses against these powerful storms. Incorporating FORTIFIED features when repairing, rebuilding or renovating your single-family home will transform your house into a more a resilient and durable property.

The FORTIFIED features focus first on strengthening and protecting the roof because it is the home's first line of defense against severe weather events. This can include things like sealing the roof deck to prevent wind-driven rain from getting inside, using roof covering that is rated for the wind speeds in your area to reduce the chances it will lift up or blow off during high winds, and using soffit vents that resist water intrusion. Protecting the openings in the house, such as doors and windows, also is important. One of the most effective FORTIFIED features you can incorporate when rebuilding is to think of your house as a system and create a continuous load path by tying the structural elements of the building together. Tying the roof to the walls, the walls to the floor and the floor to the foundation will significantly strengthen your home when Mother Nature strikes.

For more detailed information about how to make your home stronger, safer and more hurricane-resistant, please visit www.DisasterSafety.org/FORTIFIED. Also, follow us on Twitter at @DisasterSafety and on Facebook at www.facebook.com/buildfortified.

Hazard: Hurricane

Locations where the design wind speed exceeds 90 mph as determined in ASCE7-05

Construction Type: New residential, single-family detached homes

FORTIFIED Home™: Hurricane Bronze Requirements:

- Roof deck must be a minimum of 7/16 in. OSB or Plywood.
- Roof deck must be attached with 8d ring shank nails, spaced nominally at 6 in. o.c. along the edges and in the field; unless engineering analysis or local code requires more fasteners at the corners.
- Roof deck must be sealed with a qualified system. There are three qualified methods for sealing from the top side (described below).
    - Cover the entire roof deck with a full layer of self-adhering polymer modified bitumen membrane meeting ASTM D1970 requirements. It is recommended that the membrane is covered with 15# felt before shingles are applied to provide bond break, and to keep shingles from fusing with the self-adhering membrane.
    - Apply a self-adhering polymer modified bitumen flashing tape, which is at least 4 in. wide, directly to the roof deck to seal the horizontal and vertical joints. Next, apply a code-compliant 30-pound ASTM D226, Type II underlayment over the self-adhering tape. This underlayment must be attached using annular ring or deformed shank roofing fasteners with minimum 1 in. diameter caps at 6 in. o.c. spacing along all laps and at 12 in. o.c. in the field, or a more stringent fastener schedule, if required by the manufacturer for high-wind installations. Horizontal laps shall be a minimum of 2 in. and end laps shall be a minimum of 6 in. Nails with plastic or metal caps are allowed in areas where the design wind speed is less than 140 mph. Metal caps are required for areas where the design wind speed is greater than or equal to 140 mph.

- Apply reinforced synthetic roof underlayment that has an ICC approval as an alternate to ASTM D226 Type II felt paper. The synthetic underlayment must have minimum tear strength of 20 lbs. per ASTM D1970 or ASTM D4533. This underlayment must be attached using annular ring or deformed shank roofing fasteners with minimum 1 in. diameter caps at 6 in. o.c. spacing along all laps and at 12 in. o.c. in the field, or a more stringent fastener schedule, if required by the manufacturer for high-wind installations. Metal caps are required for areas where the design wind speed is greater than or equal to 140 mph.

- A drip edge must be installed (at eaves and rakes) with 3 in. laps. Drip shall extend ½ in. below sheathing and extend back on the roof a minimum of 2 in. Drip edge at eaves shall be permitted to be installed either over or under the underlayment. Drip edge at gable rake shall be installed over the underlayment. The drip edge shall be mechanically fastened to the roof deck at a maximum of 4 in. o.c.

- Shingle roof covering must be high-wind rated (Class F or higher) based on design wind speed. See chart below:

ASCE 7-05 Wind Speed (v_{asd})	ASCE 7-10 Wind Speed (v_{ult})	Shingle Wind Testing Standard/Classification
100 MPH	129 MPH	ASTM D3161 (Class F) or ASTM D 7158 (Class G or H)[1]
110 MPH	142 MPH	ASTM D3161 (Class F) or ASTM D 7158 (Class G or H)[1]
120 MPH	155 MPH	ASTM D 7158 (Class G or H)[1]
130 MPH	168 MPH	ASTM D 7158 (Class H)[1]
140 MPH	180 MPH	
150 MPH	H	

[1] **Note:** When used in Exposure D locations, shingles must pass both ASTM D3161 Class F **and** ASTM D7158 Class H testing standard.

- Concrete and clay tile systems and their attachment shall meet the requirements of the site design wind speed and exposure category.
- Metal panel roof systems and their attachment shall be installed in accordance with the manufacturer's installation instructions and shall provide uplift resistance equal to or greater than the design uplift pressure for the roof based on the site design wind speed and exposure category.
- Gable walls must have minimum of 7/16 in. structural sheathing (OSB or Plywood).
- Gable overhangs must not be vented.
- Gable wall vents must be protected against water intrusion.
- Gable overhangs framed using outlooker framing must have adequate connection at gable wall and at roof framing members. Connection can be determined by structural engineer or by using IBHS prescriptive connection detail (see page 19 of the FORTIFIED Home™: Hurricane Standards, http://disastersafety.org/wp-content/uploads/fortified-hurricane-standards_IBHS.pdf).
- Box type soffit overhangs (eave) and gable overhangs with a depth greater than 12 in. (measured from the back of fascia to exterior wall surface) and covered with aluminum or vinyl material, must have a center brace installed mid-span.
- Roof-mounted vents, including but not limited to ridge vents, off-ridge vents and turbines, must meet Florida Building Code TAS 100(A).

Hurricane Silver Requirements:

- All Bronze requirements must be satisfied.
- Gable end walls on gables greater than 48 in. in height must be braced.
- Porches and carports must have adequate connections for uplift pressures based on site design wind speed and exposure category. Connections must be provided from the roof framing to the beam/wall, from beam to column and column to structure below.
- Garage doors must be pressure rated for pressures associated with site design wind speed and exposure category.
    - Exception: if garage door has glazing, door must be pressure rated and impact rated, or pressure rated and protected with a qualified impact-resistant system.
- All window, exterior door and skylight openings must be protected with qualified opening protection systems.
    - Qualified opening protection systems must have passed an ASTM E 1996 and E 1886 impact test for large missile “D”.

Hurricane Gold Requirements:

- All Bronze and Silver requirements must be satisfied.
- Chimneys must be adequately connected to the roof structure to resist loads based on site design wind speed and exposure category.
- Windows, skylights and glass doors: Windows and glass doors must be rated for the design pressures appropriate for the exposure category, wind speed, window size, and window location on the building. See Appendix C of the FORTIFIED Home™: Hurricane Standards, http://disastersafety.org/wp-content/uploads/fortified-hurricane-standards_IBHS.pdf.
- A continuous load path must be designed and installed providing connection from roof to wall, wall to floor and floor to foundation.
- Walls must have minimum of 7/16 in. structural sheathing (OSB or Plywood).

NOTICE: ALL OF THE ABOVE MUST BE DOCUMENTED PRIOR TO BEING CONCEALED BY FINISHED MATERIALS. TAKE PHOTOGRAPHS OF THE IMPROVEMENTS WHILE THE HOME IS UNDER CONSTRUCTION. A COMPLETE PHOTO FILE SHOULD BE PRESENTED TO THE FORTIFIED EVALUATOR WORKING ON THE PROJECT.

In addition, certification letters from a structural engineer will be required to satisfy the documentation requirements for outlooker framing, gable framing and bracing, porch/carport connections, chimney connections and load path design. Copies of these letters can be obtained from IBHS or your FORTIFIED Evaluator.

Insurance Institute for Business & Home Safety

4775 East Fowler Ave., Tampa, FL 33617

DisasterSafety.org

SECTION 024116 - STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of buildings and site improvements.
2. Removing below-grade construction.
3. Disconnecting, capping or sealing, and removing site utilities.
4. Salvaging items for reuse by Owner.

1.2 MATERIALS OWNERSHIP

A. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.3 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit informational report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of building demolition with starting and ending dates for each activity.

C. Inventory of items to be removed and salvaged.

D. Predemolition photographs.

E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

1.4 QUALITY ASSURANCE

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

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

D. Predemolition Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.

B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.

1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.

a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.

C. Owner assumes no responsibility for buildings and structures to be demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. See environmental report provide in the Project Manual.
2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. On-site storage or sale of removed items or materials is not permitted.

F. Arrange demolition schedule so as not to interfere with operations of adjacent occupied buildings.

PART 2 - PRODUCTS[**(Not Used)**]

2.1 SOIL MATERIALS

A. Satisfactory Soils: Comply with requirements as specified in Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting demolition operations.

B. Inventory and record the condition of items to be removed and salvaged.

C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

3.2 PREPARATION

A. Refrigerant: Remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction before starting demolition.

B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.

1. Owner will arrange to shut off indicated utilities when requested by Contractor.
2. Arrange to shut off indicated utilities with utility companies.
3. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
4. Cut off pipe or conduit a minimum of 24 inches (610 mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.
5. Do not start demolition work until utility disconnecting and sealing have been completed.

C. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

D. Salvaged Items:

1. Clean salvaged items of dirt and demolition debris.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.3 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.

B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.

C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 015000 "Temporary Facilities and Controls."

1. Protect adjacent buildings and facilities from damage due to demolition activities.
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 barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.

D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.4 DEMOLITION

A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations.

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
2. Maintain fire watch during as needed after flame cutting operations.
3. Maintain adequate ventilation when using cutting torches.
4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, 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 authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

C. Explosives: Use of explosives is not permitted.

D. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.

E. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

F. Demolish foundation walls and other below-grade construction within footprint of new construction and extending 5 feet (1.5 m) outside footprint indicated for new construction.

1. Remove below-grade construction, including basements, foundation walls, and footings, completely.

G. Existing Utilities: Abandon existing utilities and below-grade utility structures within 5 feet (1.5 m) outside footprint indicated for new construction. Cut utilities flush with grade.

H. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements specified in Drawings.

I. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

J. Promptly repair damage to adjacent buildings caused by demolition operations.

3.5 CLEANING

A. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction. See Section 017419 "Construction Waste Management and Disposal" for recycling and disposal of demolition waste.

B. Do not burn demolished materials.

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

END OF SECTION 024116

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 ACTION SUBMITTALS

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

B. Design Mixtures: For each concrete mixture.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

1.3 INFORMATIONAL SUBMITTALS

A. Material certificates.

B. Material test reports.

C. Floor surface flatness and levelness measurements.

1.4 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.

C. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

D. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

B. 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.

2.2 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

E. 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.

2.3 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,.

   a. Fly Ash: ASTM C 618, Class F.
   b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, graded.

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

2.4 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A B C. Include manufacturer's recommended adhesive or pressure-sensitive tape.

B. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils thick.

2.5 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

G. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.6 RELATED MATERIALS

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

2.7 CONCRETE MIXTURES

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.

B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing or plasticizing admixture in 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.

3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

D. Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 3000 psi for foundations and footings at 28 days. Slabs to be 4000 psi at 28 days
2. Maximum Water-Cementitious Materials Ratio: 0.50.
3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

2.8 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.9 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, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, 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.

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.

3.3 VAPOR RETARDERS

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.

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.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

3.6 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. 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. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

C. Cold-Weather Placement: Comply with ACI 306.1.

D. Hot-Weather Placement: Comply with ACI 301.

3.7 FINISHING FORMED SURFACES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces 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.

3.8 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten 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.

E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

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 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. 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.
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, 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.
3. Curing Compound: Apply uniformly in 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. Maintain continuity of coating and repair damage during curing period.

    a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

4. 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 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.

3.11 FIELD QUALITY CONTROL

A. Testing and Inspecting: Contractor to 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. Verification of use of required design mixture.

4. Concrete placement, including conveying and depositing.

5. Curing procedures and maintenance of curing temperature.

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 at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

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 and below and when 80 deg F 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 two sets of two standard cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two 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. 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.

9. Test results shall be reported in writing to Architect, 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.

10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.

12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

D. Measure floor and slab flatness and levelness according to ASTM E 1155 (ASTM E 1155M) within 48 hours of finishing.

END OF SECTION 033000

SECTION 06100 - ROUGH CARPENTRY

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. Framing with dimension lumber.
2. Wood blocking and nailers.
3. Utility shelving.
4. Wood furring.
5. Wood Sheathing.
6. Plywood backing panels.

1.3 DEFINITIONS

A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise indicated.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NELMA - Northeastern Lumber Manufacturers Association.
2. NLGA - National Lumber Grades Authority.
3. SPIB - Southern Pine Inspection Bureau.
4. WCLIB - West Coast Lumber Inspection Bureau.
5. WWPA - Western Wood Products Association.

1.4 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include

physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D 5516 and ASTM D 5664.

3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee Board of Review.

C. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Preservative-treated wood.
2. Fire-retardant-treated wood.
3. Metal framing anchors.

1.5 QUALITY ASSURANCE

A. Source Limitations for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product through one source from a single producer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Boise Cascade Corporation.
2. Metal Framing Anchors:
   a. Simpson Strong-Tie Company, Inc.

2.2 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.

4. Provide dry lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

B. Wood Structural Panels:

1. Plywood: Either DOC PS 1, unless otherwise indicated.
2. Oriented Strand Board: DOC PS 2.
3. Thickness: As needed to comply with requirements specified but not less than thickness indicated.
4. Factory mark panels according to indicated standard.

2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA C2 (lumber) and AWPA C9 (plywood), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and one of the following:

a. Chromated copper arsenate (CCA).
b. Ammoniacal copper zinc arsenate (ACZA).
c. Ammoniacal, or amine, copper quat (ACQ).

B. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Nailers, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing members less than 8 inches above grade.

2.4 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, provide materials that comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Use treatment for which chemical manufacturer publishes physical properties of treated wood after exposure to elevated temperatures, when tested by a qualified independent testing agency according to ASTM D 5664, for lumber and ASTM D 5516, for plywood.

2. Use treatment that does not promote corrosion of metal fasteners.
3. Use Exterior type for exterior locations and where indicated.
4. Use Interior Type A High Temperature (HT), unless otherwise indicated.

2.5 DIMENSION LUMBER

A. General: Provide dimension lumber of grades indicated according to the American Lumber Standards Committee National Grading Rule provisions of the grading agency indicated.

2.6 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.

B. For items of dimension lumber size, provide Construction, or No. 2 grade lumber with 15 percent maximum moisture content and any of the following species:

1. Mixed southern pine (for preservative treated lumber); SPIB.
2. Douglas fir-larch

C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine (for preservative treated lumber); SPIB.
2. Douglas fir-larch

D. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.7 WOOD SHEATHING

A. Plywood Floor Sheathing: Structural 1 sheathing.

1. Span Rating: Not less than 48/24.
2. Thickness: See drawings.

B. Plywood Roof Sheathing: Exterior, Structural I sheathing.

1. Span Rating: Not less than 48/24

2. Thickness: Not less than 5/8 inch tongue and groove

2.8 PLYWOOD BACKING PANELS

A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2 inch thick.

2.9 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: CABO NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

F. Lag Bolts: ASME B18.2.1..

G. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2.10 METAL FRAMING ANCHORS

A. General: Provide framing anchors made from metal indicated, of structural capacity, type, and size indicated, and as follows:

1. Research/Evaluation Reports: Provide products acceptable to authorities having jurisdiction and for which model code research/evaluation reports exist that show compliance of metal framing anchors, for application indicated, with building code in effect for Project.
2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.11 MISCELLANEOUS MATERIALS

A. Building Paper: Asphalt-saturated organic felt complying with ASTM D 226, Type I (No. 15 asphalt felt), unperforated.

B. Building Wrap: Air-retarder sheeting made from polyolefins; cross-laminated films, woven strands, or spun-bonded fibers; coated or uncoated; with or without perforations; and complying with ASTM E 1677, Type I.

1. Thickness: Not less than 3 mils.
2. Permeance: Not less than 10 perms.
3. Flame-Spread Index: 25 or less per ASTM E 84.
4. Allowable Exposure Time: No more than three months.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

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

B. Do not use materials with defects that impair quality of rough carpentry or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

C. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. IBC 2012
2. Published requirements of metal framing anchor manufacturer.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build anchor bolts into masonry during installation of masonry work. Where possible, secure anchor bolts to formwork before concrete placement.

END OF SECTION 061000

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Roof sheathing.
3. Composite nail base insulated roof sheathing.
4. Subflooring.
5. Underlayment.
6. Sheathing joint and penetration treatment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory.".

2.2 WOOD PANEL PRODUCTS

A. Emissions: Products shall meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Certified Wood: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

1. Plywood.
2. Oriented strand board.
3. Particleboard underlayment.
4. Hardboard underlayment.

C. Plywood: DOC PS 1.

D. Oriented Strand Board: DOC PS 2.

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction, Use Category UC3b for exterior construction.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.4 WALL SHEATHING

A. Plywood Wall Sheathing: Exterior, Structural I sheathing.

B. Oriented-Strand-Board Wall Sheathing: Exposure 1, Structural I sheathing.

2.5 ROOF SHEATHING

A. Plywood Roof Sheathing: Exterior, 5/8” tongue and groove Structural I sheathing.

B. Oriented-Strand-Board Roof Sheathing: Exposure 1, 5/8” tongue and groove Structural I sheathing.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

2.7 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's "International Residential Code for One- and Two-Family Dwellings."

D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

END OF SECTION 061600

SECTION 06176 - METAL-PLATE-CONNECTED WOOD TRUSSES

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. Wood roof trusses.
2. Wood girder trusses.
3. Wood truss bracing.
4. Metal truss accessories.

B. Related Sections include the following:

1. Division 2 Section "Termite Control" for site application of borate treatment to wood trusses.
2. Division 6 Section "Sheathing" for roof sheathing and subflooring.

C. Allowances: Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Division 1 Section "Allowances."

1.3 DEFINITIONS

A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

B. TPI: Truss Plate Institute, Inc.

C. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. SPIB: The Southern Pine Inspection Bureau.
4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

1. Design Loads: As indicated.
2. Maximum Deflection Under Design Loads:

   a. Roof Trusses: Vertical deflection of 1/360 of span.

1.5 SUBMITTALS

A. Product Data: For wood-preservative-treated lumber, fire-retardant treated lumber, metal-plate connectors, metal truss accessories, and fasteners.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
3. For fire-retardant treatments specified to be High-Temperature (HT) type, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to truss fabricator.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

B. Shop Drawings: Prepared by or under the supervision of a qualified professional engineer. Show fabrication and installation details for trusses.

1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
2. Indicate sizes, stress grades, and species of lumber.
3. Indicate all reactions at bearing points.
4. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
6. Show splice details and bearing details.
7. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss fabricating firm.

D. Qualification Data: Registered professional engineer to have jurisdiction in the State of Rhode Island.

E. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

F. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Wood-preservative-treated lumber.
2. Fire-retardant-treated wood.
3. Metal-plate connectors.
4. Metal truss accessories.

1.6 QUALITY ASSURANCE

A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

C. Source Limitations for Connector Plates: Obtain metal connector plates from a single manufacturer.

D. Comply with applicable requirements and recommendations of the following publications:

1. TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."
2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."
3. TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."

E. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

F. Forest Certification: Provide metal-plate-connected wood trusses produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Handle and store trusses to comply with recommendations of TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."

1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
3. Provide for air circulation around stacks and under coverings.

B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

1.8 COORDINATION

A. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying progress of other trades whose work must follow erection of trusses.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. Provide dressed lumber, S4S.
4. Provide dry lumber with 15 percent maximum moisture content at time of dressing.

B. Grade and Species: For truss chord and web members, provide dimension lumber of any species, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

C. Minimum Chord Size For Roof Trusses: 2 by 6 inches nominal for both top and bottom chords.

D. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Division 6 Section "Rough Carpentry."

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA C2.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
2. For exposed trusses indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

1. For exposed trusses indicated to receive a stained or natural finish, mark end or back of each piece.

D. Application: Treat trusses where indicated on Drawings.

2.3 FIRE-RETARDANT-TREATED WOOD

A. General: Comply with performance requirements in AWPA C20.

1. Use Exterior type for exterior locations and where indicated.
2. Use Interior Type A, High Temperature (HT) for enclosed roof trusses and where indicated.
3. Use Interior Type A, unless otherwise indicated.

B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

1. For exposed trusses and bracing indicated to receive a stained or natural finish, mark end or back of each piece.

C. For exposed trusses indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.

D. Application: Treat items indicated on Drawings,

2.4 METAL CONNECTOR PLATES

A. General: Fabricate connector plates to comply with TPI 1.

B. Hot-Dip Galvanized Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 coating designation; and not less than 0.036 inch thick.

1. Use for interior locations where stainless steel is not indicated.

C. Stainless-Steel Sheet: ASTM A 666, Type 316, and not less than 0.035 inch thick.

1. Use for exterior locations and where indicated.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2.6 METAL TRUSS ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Simpson Strong-Tie Co., Inc.
2. USP Structural Connectors.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Use for interior locations where stainless steel is not indicated.

D. Stainless-Steel Sheet: ASTM A 666, Type 316.

1. Use for exterior locations and where indicated.

E. Truss Tie-Downs: Bent strap tie for fastening roof trusses to wall studs below, 1-1/2 inches wide by 0.050 inch thick. Tie fastens to one side of truss, top plates, and side of stud below.

F. Roof Truss Clips: Angle clips for bracing bottom chord of roof trusses at non-load-bearing walls, 1-1/4 inches wide by 0.050 inch thick. Clip is fastened to truss through slotted holes to allow for truss deflection.

G. Roof Truss Bracing/Spacers: U-shaped channels, 1-1/2 inches wide by 1 inch deep by 0.040 inch thick, made to fit between 2 adjacent trusses and accurately space them apart, and with tabs having metal teeth for fastening to trusses.

2.7 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 94 percent zinc dust by weight.

2.8 FABRICATION

A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

1. Fabricate wood trusses within manufacturing tolerances in TPI 1.

D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wood trusses only after supporting construction is in place and is braced and secured.

B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

D. Install and brace trusses according to TPI recommendations and as indicated.

E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.

F. Space trusses; adjust and align trusses in location before permanently fastening.

G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in truss accessories according to manufacturer's fastening schedules and written instructions.

H. Securely connect each truss ply required for forming built-up girder trusses.

1. Anchor trusses to girder trusses as indicated.

I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

1. Install bracing to comply with Division 6 Section "Rough Carpentry."
2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.

J. Install wood trusses within installation tolerances in TPI 1.

K. Do not cut or remove truss members.

L. Replace wood trusses that are damaged or do not meet requirements.

1. Do not alter trusses in field.

3.2 REPAIRS AND PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

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

C. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

D. Protective Coating: Clean and prepare exposed surfaces of metal connector plates. Brush apply primer, when part of coating system, and one coat of protective coating.

1. Apply materials to provide minimum dry film thickness recommended by coating system manufacturer.

END OF SECTION

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior wood medium-density overlay (MDO), primed lumber, cellular PVC.

B. Related sections:

1. Fiber-Cement Siding - Section 074646

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

B. Samples: For each type of product involving selection of colors, profiles, or textures.

1.3 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

1. For lumber that is not marked with grade stamp.
2. For preservative-treated wood that is not marked with treatment-quality mark.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Cellular PVC trim.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Certified Wood: The following wood products shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

1. Exterior trim.
2. Exterior hardboard siding.
3. Exterior hardboard soffits.
4. Exterior stairs and railings.

B. Lumber: DOC PS 20.

1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.

a. For exposed lumber, mark grade stamp on end or back of each piece.

C. Softwood Plywood: DOC PS 1.

D. Hardboard: ANSI A135.4.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC3b.

1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 18 percent respectively.
2. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
3. Application: All exterior lumber and plywood.

2.3 EXTERIOR TRIM

A. Lumber Trim:
1. Species and Grade: Western red cedar, Grade A; NLGA, WCLIB, or WWPA.
2. Maximum Moisture Content: 19 percent.
3. Face Surface: Surfaced (smooth).

B. Moldings: WMMPA WM 4, P-grade wood moldings, without finger jointing. Made from kiln-dried stock to patterns included in WMMPA WM 12.

1. Species: Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine.

C. MDO Trim: Exterior Grade B-B, MDO plywood.

D. Cellular PVC Trim: Extruded, expanded PVC with a small-cell microstructure, recommended by manufacturer for exterior use, made from UV- and heat-stabilized, rigid material.

1. Products: Subject to compliance with requirements, [**available products that may be incorporated into the Work include, but are not limited to, the following**]:

a. CertainTeed Corporation; CertainTeed Restoration Millwork.
b. Vycom Corp.; Azek.
c. Wolfpac Technologies, Inc.; Versatex.

2. Density: Not less than 31 lb/cu. ft. (500 kg/cu. m).
3. Heat Deflection Temperature: Not less than 130 deg F (54 deg C), according to ASTM D 648.
4. Water Absorption: Not more than 1 percent, according to ASTM D 570.

5. Flame-Spread Index: 75 or less, according to ASTM E 84.

2.4 MISCELLANEOUS MATERIALS

A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

1. For prefinished items, provide matching prefinished aluminum fasteners where face fastening is required.
2. For applications not otherwise indicated, provide stainless-steel hot-dip galvanized-steel or aluminum fasteners.

B. Continuous Soffit Vents: Aluminum hat channel shape with stamped louvers, 2 inches (51 mm) wide and in lengths not less than 96 inches (2438 mm).

1. Net Free Area: 4 sq. in./linear ft. (280 sq. cm/m).
2. Finish: White paint.

C. Sealants: Latex, complying with ASTM C 834 Type OP, Grade NF and with applicable requirements in Section 079200 "Joint Sealants," recommended by sealant manufacturer and manufacturer of substrates for intended application.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prime lumber and moldings to be painted, including both faces and edges, unless factory primed. Cut to required lengths and prime ends. Comply with requirements in Section 099113 "Exterior Painting."

3.2 INSTALLATION, GENERAL

A. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.

1. Scribe and cut exterior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
2. Install stairs with no more than 3/16-inch (4.7-mm) variation between adjacent treads and risers and with no more than 3/8-inch (9.5-mm) variation between largest and smallest treads and risers within each flight.

3.3 STANDING AND RUNNING TRIM INSTALLATION

A. Install flat-grain lumber with bark side exposed to weather.

B. Install cellular PVC trim to comply with manufacturer's written instructions.

C. Install trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches (610 mm) long except where necessary.

1. Use scarf joints for end-to-end joints.
2. Stagger end joints in adjacent and related members.

D. Fit exterior joints to exclude water. Cope at returns and miter at corners.

3.4 SIDING INSTALLATION

A. Install siding to comply with manufacturer's written instructions and warranty requirements.

B. Lumber Siding: Apply starter strip along bottom edge of sheathing or sill. Install first course of siding with lower edge at least 1/8 inch (3 mm) below starter strip and subsequent courses lapped 1 inch (25 mm) over course below. Nail at each stud. Do not allow nails to penetrate more than one thickness of siding.

C. Plywood Siding: Install panels with edges over framing or blocking. Nail at 6 inches (150 mm) o.c. at panel perimeter and 12 inches (300 mm) o.c. at intermediate supports unless manufacturer recommends closer spacing. Leave 1/16-inch (1.5-mm) gap between adjacent panels and 1/8-inch (3-mm) gap at perimeter, openings, and horizontal joints unless otherwise recommended by panel manufacturer.

1. Seal butt joints at inside and outside corners and at trim locations.

D. Hardboard Siding: Install hardboard siding to comply with manufacturer's recommendations. Install panels with edges over framing or blocking. Leave 3/16-inch (5-mm) gap at perimeter, openings, and horizontal panel joints unless otherwise recommended by panel manufacturer.

1. Seal butt joints at inside and outside corners and at trim locations.
2. Conceal fasteners to greatest practical extent by placing in grooves of siding pattern or by concealing with applied trim or battens as detailed.

END OF SECTION 062013

SECTION 062023 - INTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior trim.
2. Shelving and clothes rods.
3. Interior stairs and railings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Low-Emitting Materials: Composite wood products shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Lumber: DOC PS 20.

1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.

a. For exposed lumber, mark grade stamp on end or back of each piece

C. Softwood Plywood: DOC PS 1.

D. Hardboard: AHA A135.4.

E. MDF: ANSI A208.2, Grade 130, made with binder containing no urea-formaldehyde resin.

F. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea-formaldehyde resin.

G. Melamine-Faced Particleboard: Particleboard complying with ANSI A208.1, Grade M-2, finished on both faces with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

1. Color: As selected by Architect from manufacturer's full range.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent respectively.

B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

1. For exposed lumber and plywood indicated to receive a stained or natural finish, mark back of each piece.

C. Application: Where indicated.

2.3 INTERIOR TRIM

A. Softwood Lumber Trim:

1. Species and Grade: Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine; C Select (Choice); NeLMA, NLGA, or WWPA.
2. Species and Grade: Douglas fir-larch or Douglas fir south, Superior or C & Btr finish; NLGA, WCLIB, or WWPA.
3. Species and Grade: Southern pine, B & B finish; SPIB.
4. Species and Grade: Western red cedar, Clear Heart; NLGA, WCLIB, or WWPA.
5. Maximum Moisture Content: 19 percent.

B. Softwood Moldings for Transparent Finish (Stain or Clear Finish): WMMPA WM 4, N-grade wood moldings. Made to patterns included in WMMPA WM 12.

1. Species: Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine.
2. Maximum Moisture Content: 15 percent.

C. Moldings for Opaque Finish (Painted Finish): Made to patterns included in WMMPA WM 12.

1. Softwood Moldings: WMMPA WM 4, P grade.

a. Species: Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine.
b. Maximum Moisture Content: 15 percent.

2.4 SHELVING AND CLOTHES RODS

A. Shelving: Made from one of the following materials, 3/4 inch (19 mm) thick.

1. MDF with radiused or solid-wood front edge.
2. MDO softwood plywood with solid-wood edge.
3. Melamine-faced particleboard with radiused and filled front edge.
4. Softwood Boards: Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine; C Select (Choice); NeLMA, NLGA, or WWPA; kiln dried.
5. Softwood Boards: Douglas fir-larch, Douglas fir south, or hem-fir; Superior or C & Btr finish; NLGA, WCLIB, or WWPA; or southern pine, finish; SPIB; kiln dried.

B. Shelf Brackets with Rod Support: BHMA A156.16, B04051; prime-painted formed steel.

C. Shelf Brackets without Rod Support: BHMA A156.16, B04041; prime-painted formed steel.

2.5 STAIRS AND RAILINGS

A. Treads: Match existing.

B. Risers: Match existing.

C. Interior Railings: Match existing.

D. Balusters: Match existing.

E. Newel Posts: Match existing.

2.6 MISCELLANEOUS MATERIALS

A. Low-Emitting Materials: Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.

1. Wood glue shall have a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours.

3.2 INSTALLATION, GENERAL

A. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.

1. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
2. Countersink fasteners, fill surface flush, and sand unless otherwise indicated.
3. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining interior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
4. Install stairs with no more than 3/16-inch (4.7-mm) variation between adjacent treads and risers and with no more than 3/8-inch (9.5-mm) variation between largest and smallest treads and risers within each flight.

3.3 STANDING AND RUNNING TRIM INSTALLATION

A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Cope at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.

3.4 SHELVING AND CLOTHES ROD INSTALLATION

A. Cut shelf cleats at ends of shelves about 1/2 inch (13 mm) less than width of shelves and sand exposed ends smooth.

B. Install shelf cleats by fastening to framing or backing with finish nails or trim screws, set below face and filled. Space fasteners not more than 16 inches (400 mm) o.c.

C. Install shelf brackets according to manufacturer's written instructions, spaced not more than 32 inches (800 mm) o.c. Fasten to framing members, blocking, or metal backing, or use toggle bolts or hollow wall anchors.

D. Cut shelves to neatly fit openings with only enough gap to allow shelves to be removed and reinstalled. Install shelves, fully seated on cleats, brackets, and supports.

END OF SECTION 062023

SECTION 064460 - ARCHITECTURAL COMPOSITE COLUMNS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Columns: Load-bearing columns; fiber-reinforced polymer composite; weatherproof, insect-proof, and highly durable.

B. Decorative Capitals and Bases: To fit over shaft through center of capital and base without affecting height of the column, except for "ornate" styles of capitals for round columns.

C. Materials for column installation.

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Wood framing.

B. Section 06400 – Finish Carpentry

1.3 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: For custom products, show dimensions, configuration, and anchorages.

D. Selection Samples: Two complete sets of color photographs representing manufacturer's full range of available materials and styles.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 WARRANTY

A. At project closeout, provide to Owner or Owners Representative a copy of the

manufacturer's limited warranty outlining its terms and conditions.
1. Duration: Lifetime limited warranty extended to original owner.

B. Free from defects in material and workmanship for "lifetime" of ownership. Installation must be per manufacturer's guidelines. "Lifetime" means as long as purchaser of column owns the structure to which column is attached".

C. Free from defects in material and workmanship for "lifetime" of ownership. Installation must be per manufacturer's guidelines. "Lifetime" means "as long as purchaser of column owns the structure to which column is attached".

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. HB&G, P. O. Box 589; Troy, AL 36081; Tel.: 800-264-4424; Tel: 334-566-5000; Fax: 334-566-4629; Web: www.hbgcolumns.com.

2. Turncraft, P. O. Box 2429; White City, OR 97503; Tel.: 800-423-3311; Tel: 541-826-2911; Fax: 541-826-1393; Web: www.turncraft.com.

3. Pacific Columns, Inc. 505 W. Lambert Rd, Brea, CA 92821; Tel: 800.294.1098; Fax:(714) 257-9628 Web: www.pacificcolumns.com

2.2 LOAD BEARING COLUMNS - SQUARE

A. Composite Column:
1. Height: Refer to drawings.
2. Size: 8 inches (203 mm) square
3. Texture: Smooth.

B. Capitals and Bases:
1. Capital: Tuscan.
2. Bases: Attic.

2.3 ACCESSORY MATERIALS

A. Construction Adhesive: Non-acetone based exterior grade.
1. Use at top and bottom of shaft.
2. Use at top of cap and bottom of base prior to nailing or screwing to soffit and substrate.
3. Use to affix neck molding to shaft of square columns, prior to screwing or nailing the molding in place.

B. Caulk: Use to cover holes of nails or screws in molding for square columns.

C. Hardware:
1. Bottom Anchors: Corner irons.

2. Anchor Fasteners: Deck screws.
3. Anchor Fasteners: Concrete anchors.
4. Anchor Fasteners: Hollow wall anchors.
5. Cap and Base Fasteners: Screws.
6. Cap and Base Fasteners: Nails.
7. Molding Fasteners: Screws.
8. Molding Fasteners: Finishing nails.

2.4 FINISH

A. Primer:
1. Refer to Section 09900.

B. Finish Coat:
1. Refer to Section 09900.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Field verify opening height before ordering columns.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. If attaching handrails or corner iron to column, pre-drill holes before applying screws.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Plumb and level, with 100 percent of bottom contacting substrate and 75 percent of top contacting soffit. Center load over shaft and evenly distribute around bearing surface.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 064460

SECTION 071326 - SELF-ADHESIVE MEMBRANES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Elastomeric Bitumen polyethylene film self-adhesive membrane

1.2 SYSTEM DESCRIPTION

A. Membrane used as vapor retarder/ air barrier at sill pan flashing locations.

1.2 QUALITY ASSURANCE

A. Perform Work in accordance with UL 790 (Underwriters Laboratories Inc.) Class A Fire Hazard Classification #R11 436.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not install membrane during inclement weather or when air temperature may fall below 40 degrees F.

1.5 WARRANTY

A. Provide ten year manufacturer's warranty under provisions of Section 01100 including coverage of materials and installation and resulting damage to building resulting from failure to resist penetration of moisture.

PART 2 - PRODUCTS

2.1 MEMBRANE MATERIALS

A. Manufacturers:

1. Soprema
2. Carlisle Syntec Systems.
3. Firestone Building Products Company.

B. Membrane: Blend of bitumen, SBS thermoplastic polymers, .6 mil., with polypropylene upper face.

C. Seaming Materials: As recommended by membrane manufacturer.

2.2 MEMBRANE FASTENING

A. Surface Conditioner: Compatible with membrane.

B. Membrane Adhesive: Self- adhesive silicone release paper.

2.3 ACCESSORIES

A. Sealants: As recommended by membrane manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work; clean and smooth, free of snow or ice.

B. Verify wall openings are solidly set.

3.2 PREPARATION

A. Inspect membrane in accordance with manufacturer's instructions.

3.3 APPLICATION

A. Apply primer to sheathing surface in accordance with manufacturer's instructions.

B. Extend primer beyond sill edge, 6” on jambs and 4” below sill, minimum.

3.4 MEMBRANE APPLICATION

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

B. Apply sill membrane over building felt at sill and corner patch a minimum of 6” up jamb and 4” below sill.

C. Roll out membrane. Bond sheet to substrate except those areas directly over or within 3 inches of a working crack or expansion joint. Work out air bubbles, wrinkles, and fishmouths. Firmly press sheet into place without stretching.

D. Seal membrane to adjoining surfaces

END OF SECTION 071326

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Loose-fill insulation.
   2. Spray polyurethane foam insulation.
   3. Vapor retarders.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

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

1.4 INFORMATIONAL SUBMITTALS

A. Product Data for each type of insulation product specified.

B. Product test reports performed by qualified third-party testing agency evidencing compliance of insulation products with specified requirements including those for thermal resistance, fire-test-response characteristics, water-vapor transmission and other properties based on comprehensive testing of current products

C. Evaluation Report: Evidence of compliance of foam-plastic insulations with International Building Code (IBC,) International Residential Code (IRC) and International Energy Conservation Code (IECC.)

D. Spray Foam must be Water-Blown, Hydrophobic and may not exhibit capillary properties. Blowing agents should not be present.

E. Manufacturer’s certificate certifying that insulation provided meets or exceeds specified requirements.

F. Spray Foam Installer’s certificate that they are certified and tested within past 12 months to spray Icynene Closed Cell Spray Foam Insulation.

G. Sample Lifetime Limited Warranty

1.5 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Manufacturer's Qualifications: Product produced in an ISO 9001 registered factory

C. Single Source Responsibility: Single source product from one manufacturer

D. Installer Qualifications: Engage a Licensed Installer who has been trained and certified with in past twelve months by the particular manufacturer for product selected.

E. Fire-Test-Response Characteristics: Provide Materials specified as determined by testing identical products per test methods indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Surface-Burning Characteristics: ASTM E 84

F. Toxicity/Hazardous Materials
   1. Provide products that contain no urea-formaldehyde
   2. Provide products that contain no PBDE's
   3. Provide products that are "Low-Emitting."
   4. Ozone Depletion Potential - Zero
   5. Global Warming Potential - Zero

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturers written instructions for handling and protection prior to and during installation

B. Store both components in a temperature controlled area between 65 and 85 degrees. Do not allow product to freeze.

C. Use only those components that are supplied by the Manufacturer

1.7 PROJECT CONDITIONS

A. Do not expose to sunlight, except to extent necessary for period of Installation and concealment.

PART 2 - PRODUCTS

2.1 LOOSE-FILL INSULATION

A. Cellulosic-Fiber Loose-Fill Insulation: ASTM C 739, chemically treated for flame-resistance, processing, and handling characteristics and ASTM E 970 having a critical radiant flux of not less than 0.12 watt per square centimeter and shall meet the smoke-developed index of not more than 450.

2.2 VAPOR RETARDERS

A. Polyethylene Vapor Retarders: ASTM D 4397, 6 mils (0.15 mm) thick, with maximum permeance rating of 0.13 perm (7.5 ng/Pa x s x sq. m).

B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

PART 4 - EXECUTION

4.1 EXAMINATION

A. Examine substrates and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.
   1. Review placement area to determine that final location will not be within 3 inches of any heat source where the temperature will exceed 180 deg F per ASTM C 411 or in accordance with authorities having jurisdiction.

4.2 PREPARATION

A. Clean substrates and cavities of loose materials capable of interfering with insulation placement.

B. Remove projections capable of puncturing vapor retarders**,** or that interfere with insulation attachment.

C. Ensure that all wires, tubing and pipes in cavities are secured so as to prevent then being shifted as the Spray Foam rises.

D. Keep all non-essential traffic out of the building for a minimum of 24 hours.

E. Ensure that the work areas have adequate Cross Ventilation to clear structure of any residual odor.

F. Installer must ensure that a pre-job conference takes place to include building owner's principals and a representative of the Spray Foam Manufacturer.

G. Installer must provide evidence of current Licensing & Training by the Spray Foam Manufacturer.

H. Installer must provide a list of three references of similar size projects with same manufacturer,

4.3 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Foam-Plastic Board Insulation: Seal joints between units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Loose-Fill Insulation: Apply according to ASTM C 1015 and manufacturer's written instructions. Level horizontal applications to uniform thickness as indicated, lightly settle to uniform density, but do not compact excessively.

1. For cellulosic-fiber loose-fill insulation, comply with CIMA's Bulletin #2, "Standard Practice for Installing Cellulose Insulation."

D. Spray-Applied Insulation: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked. After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.

E. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Loose-Fill Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

4.4 INSTALLATION OF VAPOR RETARDERS

A. Place vapor retarders on side of construction indicated on Drawings. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with

adhesives or other anchorage system as indicated. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.

B. Seal vertical joints in vapor retarders over framing by lapping no fewer than two studs.

1. Fasten vapor retarders to wood framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16 inches (406 mm) o.c.
2. Before installing vapor retarders, apply urethane sealant to flanges of metal framing including runner tracks, metal studs, and framing around door and window openings. Seal overlapping joints in vapor retarders with vapor-retarder tape according to vapor-retarder manufacturer's written instructions. Seal butt joints with vapor-retarder tape. Locate all joints over framing members or other solid substrates.
3. Firmly attach vapor retarders to metal framing and solid substrates with vapor-retarder fasteners as recommended by vapor-retarder manufacturer.

C. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.

D. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

END OF SECTION 072100

SECTION 073113 - ASPHALT SHINGLE ROOFING SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Granule surfaced asphalt shingle roofing.

B. Moisture shedding underlayment, eaves, valley and ridge protection.

C. Associated metal flashing.

1.2 RELATED SECTIONS

A. Section 061000 – Rough Carpentry: Plywood Roof Sheathing

B. Section 07130 – Sheet Waterproofing.

C. Section 074646 – Fiber-Cement Siding

D. Section 077100 – Roof Specialties

1.3 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: Provide manufacturer's printed product information indicating material characteristics, performance criteria and product limitations.

C. Manufacturer's Installation Instructions: Provide published instructions that indicate preparation required and installation procedures.

D. Certificate of Compliance: Provide Certificate of Compliance from an Independent laboratory indicating that the asphalt fiberglass shingles made in normal production meet or exceed the requirements of the following:
1. ASTM E 108/UL 790 Class A Fire Resistance
2. ASTM D 3161/UL 997 Wind Resistance.
3. ASTM D 3462

E. Shop Drawings: Indicate specially configured metal flashing, jointing methods and locations, fastening methods and locations and installation details as required by project conditions indicated.

1.4 QUALITY ASSURANCE

A. Installer Minimum Qualifications: Installer shall be licensed or otherwise authorized by all federal, state and local authorities to install all products specified in this section. Installer shall perform work in accordance with NRCA Roofing and Waterproofing Manual.

B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by architect
2. Do not proceed with remaining work until workmanship, color and pattern are approved by Architect.
3. Rework Mock-Up area as required to produce acceptable work.

C. Maintain one copy of manufacturer's application instructions on the project site.

D. Verify that manufacturer's label contains references to specified ASTM standards.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store Products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials and materials used with solvent based materials, in accordance with requirements of local authorities having jurisdiction.

C. Deliver shingles to site in manufacturer's unopened labeled bundles. Promptly verify quantities and conditions. Immediately remove damaged products from site.

1.6 PROJECT CONDITIONS

A. Anticipate and observe environmental conditions (temperature, humidity and moisture) within limits recommended by manufacturer for optimum results. Do not install products under environment conditions outside manufacturer's absolute limits.

B. Provide 100 square feet of extra shingles of each color specified.

C. Take special care when applying waterproofing shingle underlayment and shingles when ambient or wind chill temperature is below 45 degrees F (7 degrees C). Tack underlayment in place if it does not adhere immediately to the deck.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Provide products manufactured by the CertainTeed Corporation. Contact Sales Support Group P.O. Box 860 Valley Forge, PA 19482.

1. Requests for substitutions will be considered in accordance with provisions of Section 012500

2.2 ASPHALT FIBERGLAS SHINGLES

A. Basis of Design: CertainTeed Landmark TL: three-piece laminated fiber glass construction, conforming to– Self-Sealing; UL Certificatied to meet ASTM D 3018 Type I and ASTM D 3461, ASTM D3161 Class "F" (110-mph)/UL997 Wind Resistance OR ASTM D7158 (Class G or H), conforms to CSA standard A123.5, glass fiber mat base; ceramically colored/UV resistant mineral surface granules across entire face of shingle; meets ASCE 7-10 Ultimate Wind Speed of 139 mph.

1. Shingle Physical Characteristics
   a. Weight: 305 pounds per square (100 square feet)
   b. Weather exposure: 5 5/8"
   c. Color: As selected by architect and owner from manufacturer's standard selection.

2. Warranty
   a. Lifetime limited, transferable warranty.
   b. 10-year SureStart™ warranty (100% replacement and labor costs due to manufacturing defects)
   c. 15-year StreakFighter™ warranty against streaking and discoloration caused by airborne algae
   d. 15-year, 110 mph wind-resistance warranty

2.3 SHEET MATERIALS

A. Roofing Underlayment: ASTM D 226, Type II - No. 30 asphalt-saturated organic felt.

B. Roof Detail Flashing Membrane: ASTM D 1970, cold applied, self-adhering membrane composed of an aggressive rubberized asphalt adhesive backed by a layer of high-density, cross-laminated polyethylene, rubberized asphalt surface backed with a release paper to protect its adhesive quality.

1. Acceptable Products and Manufacturers: Grace Roof Detail Membrane as manufactured by W. R. Grace & Co.–Conn., Grace Construction Products, Cambridge, MA.
   a. Thickness: 40 mil (1.02 mm)
   b. Roll Width: 18 inches (457 mm)

C. Waterproofing Roofing Underlayment: ASTM D 1970, cold applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of rubberized asphalt adhesive, embossed, slip resistant surface on the polyethylene, interwound with a disposable siliconecoated release sheet.

1. Acceptable Products and Manufacturers: Grace Ice &Water Shield as manufactured by W. R. Grace & Co.–Conn., Grace Construction Products, Cambridge, MA.
   a. Thickness: 40 mil (1.02 mm)
   b. Roll Width: 36 inches (914 mm)
   c. Strips: 12 inch or 18 inch widths

2.4 ROOF DRIP EDGE

A. Minimum .019" aluminum, Style-D drip edge, pre-fabricated to provide a minimum 1” drop with 1/4" drip at lower edge by minimum 3” roof deck flange. Furnish in 10’ lengths. Do not install drip edge in pieces shorter than 24 inches in length. Prefinished, Color: as selected by architect.

2.5 METAL FLASHING

A. Step Flashing - .027” minimum mill finished aluminum, pre-bent 6” x 6” x 12”, cut to size and configurations only to accommodate non-typical project specific conditions.

B. Sheet Flashing: ASTM A 361/A361M; 26 Gauge (0.45 mm) steel with minimum G115/Z350 galvanized coating

C. Sheet Flashing: ASTM B 209, .032 thick aluminum, prefinished, smooth texture, Color: as selected by architect.

2.6 RIDGE, ROOF/WALL AND SOFFIT VENTS

B. Ridge Vent: Cor-A-Vent Inc., Type V-600 (20 sq. in. net free area per linear foot) or approved equal. Provide end caps. Install per manufacturer's specifications.

C. Roof-to-Wall Vent: Cor-A-Vent Inc., Roof-2-Wall Vent (8.5 sq. in. net free area per linear foot) or approved equal. Provide end caps. Install per manufacturer's specifications.

D. Soffit Vent: Cor-A-Vent Inc., Type S-400 (1”x3/4” - 10 sq. in. net free area per linear foot) or Type PS-400 (1”x1 1/2” - 10 sq. in. net free area per linear foot)l. Install per manufacturer's specifications.

2.7 ROOF JACKS

A. Dryer Vents and Exhaust Fans
Provide Vent Air Products, RCVS Series Roof Cap Vent with stem and one way damper, Fantech 4 inch aluminum Roof Cap Vent with screened opening Model RC4, Broan Nutone Black Roof Vent Cap Model 636 or equal. Size cap and stem to match existing vent duct. Color: as selected by architect.

2.8 ROOF PLUMBING AND VENT FLASHINGS

A. Furnish and install new Oatey Aluminum Base no-caulk Plumbing Pipe Penetration Flashing with black neoprene base at all plumbing penetrations, size to fit vent stack, IPS Adjustable Multi-size Roof Flashings, Aztec Washer Company Res Lead Master Flash Plumbing Vent Flashings or equal.

2.9 ACCESSORIES

A. Nails: annular ring or deformed shank type roofing fasteners, corrosion-resistant; hot dipped zinc coated steel, aluminum or chormated steel; minimum 3.8 inch head diameter; minimum 11 or 12 gage shank diameter; 1 1/4” minimum shank length, but of sufficient length to penetrate through the roof sheathing or 3/4 inch into solid wood. Nails with plastic or metal caps are allowed where the design wind speed is less than 140 mph. Metal caps are required for areas where the design wind speed is greater than or equal to 140 mph.

B. Asphalt Roofing Cement: ASTM D 4586, Type I or II

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions under provisions of Section 017000.

B. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surfaces.

C. Verify deck surfaces are dry and free of ridges, warps or voids.

3.2 ROOF DECK PREPARATION

A. Follow shingle and underlayment manufacturer's recommendations for acceptable roof deck material.

B. Remove all dust, dirt, loose nails and protrusions from the deck areas where waterproofing roofing underlayment is intended to be installed.

C. Prime deck under areas under areas where waterproofing roofing underlayment is intended to be installed if underlayment adhesion is found to be marginal. Utilize manufacturer recommended primer compatible with the waterproofing underlayment.

3.3 INSTALLATION – ROOFING

A. General: Comply with instructions and recommendations of shingle manufacturer unless otherwise noted in the contract documents.

B. Membrane Flashing at Valleys:

1. For "closed-cut," "woven," and "open" valleys, extend self-adhering waterproofing membrane, minimum 36 inches on each side of valleys. Lap joints minimum of 6 inches, installing the membrane such that all laps shed water, working from the low point to the high point of the roof. Follow instructions of membrane manufacturer.

C. Membrane Flashing at Rakes and Eaves:

1. Place eave edge and gable metal edge flashing tight with fascia boards. Weather-lap joints 2 inches. Secure flange with nails spaced 8 inches on center

2. Apply waterproofing shingle underlayment as eave and gable/rake protection in accordance with manufacturer's instructions.

3. Consistent with good roofing practice, install the membrane such that all laps shed water, working from the low point to the high point of the roof. Apply the membrane in valleys before the membrane is applied to the eaves.

4. Extend eave protection membrane minimum 24 inches up slope beyond interior face of exterior wall.

5. Furnish and install continuous strip of ice protection underlayment asphalt roll roofing along eaves to a point 36" minimum inboard of the heated wall line. Provide sufficient protection membrane around vent pipes, exhaust outlets and any other roof penetrations. Provide 2" laps where required.

D. Membrane Flashing at Roof Vents:

1. Cover metal flanges of roof vents with strips of rubberized membrane, minimum 12 inches wide, starting at the bottom and lapping sides and top a minimum of 3 inches.

E. Drip Edge Flashing:

1. Install metal drip edge flashing / edge protection as indicated and in compliance with details and recommendations of the NRCA Steep-Slope Roof Systems Manual.

2. Install metal drip edge at eaves first, securing directly to roof sheathing. Roofing underlayment is installed over metal drip edge at these locations.

3. Complete installation by installing drip edge over roofing underlayment at rake / gable locations. Begin installation at the eave. Lap joints minimum of 2 inches, installing the drip edge sections such that all laps shed water, working from the low point to the high point of the roof. Rake / gable edge should overlap eave edge at low point of roof.

4. Ensure that all eave drip edges are fully wrapped at corners to create a closed, lapped condition when installation is complete. Open corners are not allowed.

5. Secure all metal drip edge sections to roof with nails centered in the top surface every 8 to 10 inches on-center.

6. Install drip edges at eaves and rakes, with 3 in. min. laps. Drip shall extend ½ in. min. below sheathing and extend back on the roof a min, of 2”. Drip edge at eaves shall be permitted to be installed either over or under the underlayment. Drip edge at gable rake shall be installed over the underlayment. The drip edge shall be mechanically fastened to the roof deck at a maximum of 4 in. o.c.

F. Flashing at Vertical Walls:

1. Extend membrane flashing and roofing underlayment 12 inches minimum up vertical wall surfaces and 24 inches on roof deck surface below.

2. Build in and integrate metal step flashing at each course of shingles as work progresses. Apply plastic cement at roof surfaces of each piece of flashing.

3. Step flashing shall extend a minimum of 6 inches up vertical wall surface and shall be 2 inches wider than the shingle exposure. Each step flashing piece shall overlap the one on the course below by 2 inches.

4. Step flashing should be nailed to the roof deck only. Do not nail flashing to the vertical wall surface. The fiber cement lap siding will be installed over the vertical sections of step flashing to serve as counter-flashing. Do not nail lap siding through the step flashing

5. Install metal kick-out flashing at the ends of the vertical sidewall or turn the step flashing out in a manner that directs water away from the wall and onto the roof and/or gutter.

G. Vent Pipe Flashing and Roof Jacks: Bind in pipe flashing or roof jacks by applying shingles up to pipes. Cut hole in shingles for pipe in next course. Place a bed of roofer's cement around opening and set shingle in mastic.

H. Apply rubberized membrane over and around metal flashing. Cut shingles in next course around opening and bed into mastic.

I. Flashing at roof exhaust fans and at intersecting roofs: Cut shingles to step and counter flash each course. Place a bed of asphalt plastic cement around opening and set shingle in mastic.

J. Roofing Underlayment:

1. Roof Slopes between 2:12 and 4:12: Apply one layer of self-adhering waterproofing membrane over entire roof area. Apply waterproofing membrane in accordance with manufacturer's instructions.

2. Roof Slopes 4:12 or Greater: Install one layer of asphalt felt shingle underlayment applied shingle fashion, parallel to and starting from the eave and lapped 2 inches, fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be offset by 6 feet.

3. Weather-lap and seal watertight with asphalt roofing cement items projecting through or mounted on roof.

4. Note: Standard shingle underlayment may be eliminated if Zip System oriented-strand board roof sheathing with integral water-resistive barrier is utilized. Eave, rake and detail waterproofing underlayment / protection is still required if this option is chosen.

K. Roof Shingles:

1. Install manufacturer's starter strip or a course of the specified shingles with tabs removed; fasten shingles in pattern and weather exposure as recommended by manufacturer. Use horizontal and vertical chalk lines to ensure straight coursing. Inverting a course of shingles is not an acceptable starter course.

2. Install shingles in accordance with manufacturer's instructions for the product type, the NRCA Steep-Slope Roof Systems Manual and in strict accordance with recommendations for installation in a high wind zone.

3. Four nails are required per shingle. Nails must be of sufficient length to penetrate into the deck 3/4" or through the thickness of the decking, whichever is less. They must be placed on the nail line marked on the shingle. Fasteners are to be located 1" and 13 1/2" in from each side of the shingles (see instructions on product wraps). Nails are to be 11 or 12 gauge, corrosion-resistant roofing nails with 3/8" heads. Staples are not allowed. On slopes greater

than 21" per foot, fasten each shingle with six nails and apply four spots of roofing cement placed under each shingle according to application instructions provided on the shingle package.

4. The manufacturer recommended application method is the ‘Five-Course Diagonal Method’ found on each bundle of shingles. In this method, shingle course offsets are 6" and 11". Chosen application method must be verified with manufacturer’s specifications and installation instructions.

L. Ridge Vents: Install in accordance with manufacturer’s instructions. Contractor should provide cap shingles on all ridges, with or without vent.

3.4 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Section 01400.

B. Visual inspection of the work will be provided by Owner. If conditions are unacceptable, Owner will notify the Architect.

3.5 PROTECTION OF FINISHED WORK

M. Protect finished work under provisions of Section 01700.

N. Do not permit traffic over finished roof surface.

END OF SECTION 073113

SECTION 074646 - FIBER-CEMENT SIDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes fiber-cement siding and soffit.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For fiber-cement siding and soffit including related accessories.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Product test reports.

C. Research/evaluation reports.

D. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for fabrication and installation.

1. Build mockup of typical wall area as shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FIBER-CEMENT SIDING

A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:

a. CertainTeed Corporation.
b. GAF Materials Corporation.
c. James Hardie Building Products, Inc.
d. James Hardie Siding Products.

B. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C 1186 by a qualified testing agency acceptable to authorities having jurisdiction.

C. Nominal Thickness: Not less than 5/16 inch (8 mm).

D. Horizontal Pattern: Boards 5-1/4 inches (133 mm) and 9-1/4 to 9-1/2 inches (235 to 241 mm) wide in plain style.

1. Texture: Smooth.

E. Vertical Pattern: 48-inch- (1200-mm-) wide sheets with wood-grain texture and grooves 8 inches (203 mm) o.c.

F. Panel Texture: 48-inch- (1200-mm-) wide sheets with smooth texture.

G. Factory Priming: Manufacturer's standard acrylic primer.

2.2 FIBER-CEMENT SOFFIT

A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:

a. CertainTeed Corporation.
b. James Hardie Building Products, Inc.
c. James Hardie Siding Products.

B. Nominal Thickness: Not less than 5/16 inch (8 mm).

C. Pattern: Width per details on drawings, wide sheets with smooth texture.

D. Factory Priming: Manufacturer's standard acrylic primer.

2.3 ACCESSORIES

A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.

B. Flashing: Provide aluminum flashing complying with Section 076200 "Sheet Metal Flashing and Trim" at window and door heads and where indicated.

1. Finish for Aluminum Flashing: Siliconized polyester coating.

C. Fasteners:

1. For fastening to wood, use siding nails of sufficient length to penetrate a minimum of 1 inch (25 mm) into substrate.
2. For fastening to metal, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1/4 inch (6 mm), or three screw-threads, into substrate.
3. For fastening fiber cement, use hot-dip galvanized fasteners.

D. Insect Screening for Soffit Vents: Aluminum, 18-by-16 (1.4-by-1.6-mm) mesh.

E. Continuous Soffit Vents: Aluminum, hat-channel shape.

1. Net-Free Area: 4 sq. in./linear ft. (280 sq. cm/m).
2. Finish: Mill finish.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

1. Install fasteners no more than 24 inches (600 mm) o.c.

B. Install joint sealants as specified in Section 079200 "Joint Sealants" and to produce a weathertight installation.

3.2 ADJUSTING AND CLEANING

A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.

B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 074646

SECTION 077100 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Roof-edge specialties.
   2. Reglets and counterflashings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roof specialties.

   1. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.

C. Samples: For each type of roof specialty and for each color and texture specified.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements that are FM Approvals listed for specified class.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. SPRI Wind Design Standard: Manufacture and install copings roof-edge specialties tested according to SPRI ES-1 and capable of resisting the following design pressures:

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 ROOF-EDGE DRAINAGE SYSTEMS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide Classic Gutter System LLC or comparable product by one of the following:
   1. Castle Metal Products.
   2. CopperCraft by FABRAL; a Euramax company.

C. Downspouts: Plain round complete with smooth-curve elbows, manufactured from the following exposed metal. Furnish with round two-piece metal brackets w/ concealed anchor behind gutter, from same material as downspouts, and anchors.
   1. Formed Aluminum: 0.032 inch (0.81 mm) thick.

   2. Color: As selected by Architect from manufacturer's full range.

2.3 REGLETS AND COUNTERFLASHINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide the Garland Company, Inc. or comparable product by one of the following:

   1. Castle Metal Products.
   2. Cheney Flashing Company.
   3. Fry Reglet Corporation.
   4. Heckmann Building Products Inc.
   5. Hickman Company, W. P.
   6. Keystone Flashing Company, Inc.
   7. Metal-Era, Inc.
   8. Metal-Fab Manufacturing, LLC.

C. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:

   1. Zinc-Coated Steel: Nominal 0.022-inch (0.56-mm) thickness.
   2. Formed Aluminum: thick.
   3. Stainless Steel: 0.019 inch (0.48 mm) thick.
   4. Copper: 16 oz./sq. ft. (0.55 mm thick).
   5. Corners: Factory mitered and mechanically clinched and sealed watertight.
   6. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.

7. Stucco Type, Embedded: Provide reglets with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
8. Concrete Type, Embedded: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
9. Masonry Type, Embedded: Provide reglets with offset top flange for embedment in masonry mortar joint.
10. Multiuse Type, Embedded: For multiuse embedment in cast-in-place concrete or masonry mortar joints.

D. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding 12 feet (3.6 m) designed to snap into reglets or through-wall-flashing receiver and compress against base flashings with joints lapped, from the following exposed metal:

1. Zinc-Coated Steel: Nominal 0.022-inch (0.56-mm) thickness.
2. Formed Aluminum: 0.024 inch (0.61 mm) thick.
3. Stainless Steel: 0.019 inch (0.48 mm) thick.
4. Copper: 16 oz./sq. ft. (0.55 mm thick).

E. Accessories:

1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.
2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

F. Zinc-Coated Steel Finish: Two-coat fluoropolymer .

1. Color: As selected by Architect from manufacturer's full range <**Insert color**>.

G. Aluminum Finish: Two-coat fluoropolymer.

1. Color: As selected by Architect from manufacturer's full range <**Insert color**>.

H. Stainless-Steel Finish: No. 2B (bright, cold rolled, unpolished).

I. Copper Finish: Non-patinated, mill.

2.4 MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

C. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304.

D. Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 or H01 temper.

2.5 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

If used in lieu of felt paper, reinforced synthetic roof underlayment must have a ICC approval as an alternate to ASTM D226 Type II felt paper and must have a minimum strength of 20 lbs per ASTM D1970 or ASTM D4533.

1. Thermal Stability: ASTM D 1970/D 1970M; stable after testing at 240 deg F (116 deg C).
2. Low-Temperature Flexibility: ASTM D 1970/D 1970M; passes after testing at minus 20 deg F (29 deg C).
3. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. The Garland Company, Inc.
   b. Carlisle Coatings & Waterproofing; CCW WIP 300HT.
   c. Grace Construction Products, a unit of W. R. Grace & Co.;.
   d. Henry Company; Blueskin PE200 HT.
   e. Metal-Fab Manufacturing, LLC; MetShield.
   f. Owens Corning; WeatherLock Metal High Temperature Underlayment.

B. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

C. Slip Sheet: Rosin-sized building paper, 3-lb/100 sq. ft. (0.16-kg/sq. m) minimum.

2.6 MISCELLANEOUS MATERIALS

A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:

1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
2. Fasteners for Copper Sheet: Copper, hardware bronze, or passivated Series 300 stainless steel.
3. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.
4. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
5. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.
6. Fasterners for Underlayment: annular ring or deformed shank roofing fasteners. Nails with plastic or metal caps are allowed where the design wind speed is less than 140 mph. Metal caps are required for areas where the design wind speed is greater than or equal to 140 mph.

B. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

C. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.

D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

E. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

F. Solder for Copper: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.

G. Self-adhering flashing tape: 4 in. min. width, self-adhering polymer modified bitumen flashing tape.

2.7 FINISHES

A. Coil-Coated Galvanized-Steel Sheet Finishes:

1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with ASTM A 755/A 755M and coating and resin manufacturers' written instructions.

   a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.
   b. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.
   c. Two-Coat Mica Fluoropolymer: AAMA 621. Fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat.
   d. Three-Coat Metallic Fluoropolymer: AAMA 621. Fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.

B. Coil-Coated Aluminum Sheet Finishes:

1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

   a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.
   b. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.
   c. Two-Coat Mica Fluoropolymer: AAMA 2605. Fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat.
   d. Three-Coat Metallic Fluoropolymer: AAMA 2605. Fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.

C. Copper Sheet Finishes:

1. Non-Patinated Finish: Mill finish.

2. Pre-Patinated Finish: Chemically treated according to ASTM B 882.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.

1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
2. Provide uniform, neat seams with minimum exposure of solder and sealant.
3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
4. Torch cutting of roof specialties is not permitted.
5. Do not use graphite pencils to mark metal surfaces.

B. Underlayment: Install horizontal laps of 2 in min. and end laps of 6 in. minimum, or per Rhode Island State Building Code, whichever is more stringent.

C. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of uncoated aluminum roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.

D. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

1. Space movement joints at a maximum of 12 feet (3.6 m) with no joints within 18 inches (450 mm) of corners or intersections unless otherwise indicated on Drawings.
2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

E. Fasteners & Sizes: Use fasteners of sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

1. Install at 6” o.c. spacing along all laps and at 12” o.c. in the field, or a more stringent fastener schedule, if required by the manufacturer for high-wind installations or Rhode Island State Building Code.

F. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.

G. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

H. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work. Tin edges of uncoated copper sheets using solder for copper. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

I. Self-adhering flashing tape: Install directly to the roof deck to seal the horizontal and vertical joints.

J. Roof-mounted vents, including but not limited ridge vents, off-ridge vents and turbines, must meet Florida Building Code TAS 100(A) or approved equal.

3.2 ROOF-EDGE DRAINAGE-SYSTEM INSTALLATION

A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.

B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than 12 inches (305 mm) apart. Attach ends with rivets and seal with solder to make watertight. Slope to downspouts.

1. Install gutter with expansion joints at locations indicated but not exceeding 50 feet (15.2 m) apart. Install expansion-joint caps.

C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1500 mm) o.c.

1. Provide elbows at base of downspouts at grade to direct water away from building.
2. Connect downspouts to splash-blocks at ground level.

3.3 REGLET AND COUNTERFLASHING INSTALLATION

A. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches (100 mm) over top edge of base flashings. See Drawings and details for specific areas where existing reglet and counterflashing are to remain and be covered with new reglet and counterflashing.

B. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with butyl sealant. Fit counterflashings tightly to base flashings. See Drawings and details for specific areas where

existing reglet and counterflashing are to remain and be covered with new reglet and counterflashing.

3.4 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as roof specialties are installed.

END OF SECTION 077100

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Latex joint sealants.

1.2 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.3 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.4 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following:

1. Architectural sealants shall have a VOC content of 250 g/L or less.

2. Sealants and sealant primers for nonporous substrates shall have a VOC content of 250 g/L or less.
3. Sealants and sealant primers for nonporous substrates shall have a VOC content of 775 g/L or less.

B. Low-Emitting Interior Sealants: Sealants and sealant primers shall comply with the testing and product requirements of the California Department of Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. GE Construction Sealants; SCS2700 SilPruf LM .
b. Sika Corporation U.S.;.

B. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Dow Corning Corporation; 791.
b. GE Construction Sealants; SCS2000 SilPruf.
c. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 265 LTS.
d. Pecora Corporation; PCS.
e. Sika Corporation U.S.; Sikasil WS-295 Sikasil WS-295 FPS.

C. Silicone, S, P, 100/50, T, NT: Single-component, pourable, plus 100 percent and minus 50 percent movement capability traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade P, Class 100/50, Uses T and NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 728 SG.

D. Silicone, M, P, 100/50, T, NT: Multicomponent, pourable, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type M, Grade P, Class 100/50, Uses T and NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 728 RCS.

2.3 URETHANE JOINT SEALANTS

A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals, LLC, Building Systems; Sonalastic TX1.
b. Bostik, Inc.; Chem-Calk GPS1.
c. ER Systems, an ITW Company; Pacific Polymers Elasto-Thane 230 MP.
d. Pecora Corporation; Dynatrol I-XL.
e. Polymeric Systems, Inc.; Flexiprene 1000.
f. Schnee-Morehead, Inc., an ITW company; Permathane SM7108.
g. Sherwin-Williams Company (The); Stampede-1.
h. Sika Corporation U.S.; Sikaflex Textured Sealant.
i. Tremco Incorporated; Dymonic.

B. Urethane, M, NS, 50, T, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Uses T and NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Tremco Incorporated; Dymeric 240.

2.4 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Dow Corning Corporation; 786-M White.
    b. GE Construction Sealants; SCS1700 Sanitary.
    c. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 100 WF.
    d. Soudal USA; RTV GP.
    e. Tremco Incorporated; Tremsil 200.

2.5 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. BASF Construction Chemicals, LLC, Building Systems; Sonolac.
    b. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex 600.
    c. Pecora Corporation; AC-20.
    d. Sherwin-Williams Company (The); 850A.
    e. Tremco Incorporated; Tremflex 834.

2.6 JOINT-SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:

    a. BASF Construction Chemicals, LLC, Building Systems.
    b. Construction Foam Products, a division of Nomaco, Inc.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove laitance and form-release agents from concrete.
2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF JOINT SEALANTS

A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.3 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:
   a. Perform one test for each 10 feet of joint length thereafter or one test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.4 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

1. Joint Locations:
   a. Joints between different materials listed above.
   b. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, M, P, 50, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

   a. Construction joints in cast-in-place concrete.
   b. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Isolation joints in cast-in-place concrete slabs.
b. Control and expansion joints in tile flooring.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, P, 25, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.
b. Vertical joints on exposed surfaces of unit masonry concrete walls and partitions.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.

1. Joint Locations:

a. Control joints on exposed interior surfaces of exterior walls.
b. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Acrylic latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors .

F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Tile control and expansion joints where indicated.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

G. Joint-Sealant Application: Concealed mastics.

1. Joint Locations:

a. Aluminum thresholds.
b. Sill plates.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081433 - STILE AND RAIL WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Interior stile and rail wood doors.
2. Priming stile and rail wood doors.
3. Fitting stile and rail wood doors to frames and machining for hardware.
4. Pre-hanging doors in frames.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For stile and rail wood doors. Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and other pertinent data.

1.3 INFORMATIONAL SUBMITTALS

A. Quality Standard Compliance Certificates: AWI Quality Certification.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is a certified participant in AWI's Quality Certification Program.

B. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

C. Warranty: Provide warranty to the following terms:
1. Interior Doors: two (2) years
2. Include coverage for de-lamination of veneer, warping beyond specified installation tolerances, defective materials and telegraphing core construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Use only materials that comply with referenced standards and other requirements specified.

2.2 INTERIOR STILE AND RAIL WOOD DOORS

A. Interior Stile and Rail Wood Doors: Interior doors complying with WDMA I.S.6, "Industry Standard for Wood Stile and Rail Doors," and with other requirements specified.
   1. Basis-of-Design Product: Subject to compliance with requirements, indicated on Drawings or comparable product by one of the following:
      a. JELD-WEN, inc.
      b. Simpson Door Company.
      c. Masonite Corp.

   2. Finish and Grade: Factory Primed and field finished.
   3. Wood Species: Manufacturer's standard softwood species and cut.

   4. Raised-Panel Thickness: **Manufacturer's standard.**

2.3 STILE AND RAIL WOOD DOOR FABRICATION

A. Fabricate stile and rail wood doors in sizes indicated for field fitting.

B. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels unless otherwise indicated:

   1. Clearances: Provide 1/8 inch (3 mm) at heads, jambs, and between pairs of doors. Provide 1/2 inch (13 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide not more than 3/8 inch (10 mm) from bottom of door to top of threshold.

      a. Comply with NFPA 80 for fire-rated doors.

   2. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
   3. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) on lock edge; trim stiles and rails only to extent permitted by labeling agency.

C. Factory machine doors for hardware that is not surface applied.

D. Glazed Openings: Trim openings indicated for glazing with solid wood moldings, with one side removable. Miter wood moldings at corner joints.

E. Glazed Openings: Factory install glazing in doors, complying with Section 088000 "Glazing." Install glass using manufacturer's standard elastomeric glazing sealant complying with

ASTM C 920. Secure glass in place with removable wood moldings. Miter wood moldings at corner joints.

F. Louvred Openings: Factory installed louvres in interior doors at mechanical room closets and as indicated on Drawings.

G. Prehung Doors: Provide stile and rail doors complete with frames, **weather stripping,** and hardware.

1. Provide wood door frames that comply with **Section 062023 "Interior Finish Carpentry."**
2. Provide hardware **including weather stripping,** that complies with Section 087100 "Door Hardware."

2.4 SHOP PRIMING

A. Doors for Opaque Finish: Shop prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 099123 "Interior Painting."

2.5 FINISHING

A. All doors to be finished according to Section 099123 "Interior Painting."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hardware: For installation, see Section 087100 "Door Hardware."

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

1. Install fire-rated doors according to NFPA 80.
2. Install smoke- and draft-control doors according to NFPA 105.

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

1. Clearances: Provide 1/8 inch (3 mm) at heads, jambs, and between pairs of doors. Provide **1/8 inch** from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide **1/4 inch** from bottom of door to top of threshold unless otherwise indicated.

a. Comply with NFPA 80 for fire-rated doors.

b. Comply with ADA accessibility requirements.

2. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
3. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) on lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

END OF SECTION 081433

SECTION 082500 - FIBERGLASS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Glazed Fiberglass Entrance Doors

1.2 REFERENCES

A. American Architectural Manufacturer Association (AAMA)

1. AAMA 1304; Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems.

B. ASTM International

1. ASTM E283; Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
2. ASTM E330; Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Pressure Difference
3. ASTM E331; Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
4. ASTM E547; Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference
5. (Specifier Note: In applications where hurricane resistance is not required DELETE ASTM E 1886 and E 1996 references.)
6. ASTM E 1886; Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
7. ASTM E 1996; Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes

C. National Fenestration Rating Council (NFRC)

1. NFRC 100; Procedure for Determining Fenestration Thermal Properties
2. NFRC 200; Solar Heat Gain Coefficient and Visible Transmittance

1.3 DESIGN REQUIREMENTS

A. Provide doors capable of complying with the following total door ratings:

1. U-Factor: ≤ 0.32.
2. Solar Heat Gain Coefficient (SHGC): ≤ 0.32.

B. All exterior doors shall be Energy Star qualified.

1.4 SUBMITTALS

A. Refer to Section 01300 Submittal Procedures
B. Product Data: Submit door manufacturer current product literature, including installation instruction.
C. Samples: Provide finish samples for all products.
D. Quality Assurance Submittals

1. Design Data: Provide manufacturer test report numbers indicating product compliance with indicated requirements.
2. Manufacturer Instructions: Provide manufacturer's written installation instructions.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver doors, materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store doors as recommended by manufacturer.

1.6 WARRANTY

A. Manufacturer standard warranty indicating that doors will be free from material and workmanship defects from the date of substantial completion for the time periods indicated below:

1. Door System: Limited Lifetime
2. Frame: Limited Lifetime.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. JELD-WEN FiberLast Doors; 3305 Lakeport Blvd; Klamath Falls, OR 97601; Tel.: 877-535-3462, Fax: 541-882-3455; Web: www.jeld-wen.com.

2. Masonite; One Tampa City Center, 201 N Franklin St., Suite 300, Tampa, Florida 33602; Tel.: 800-895-2723, Fax: 813-739-0204; Web: www.masonite.com

3. Alternate manufacturers will be considered in accordance with provisions of Section 01600.

B. Basis of Design: Doors are based on the JELD-WEN FiberLast Fiberglass Series.

1. FiberLast, Smooth White FL-684.

2.2 MATERIALS

A. Stiles and Rails: Engineered wood (laminated veneer lumber); AuraLast stiles and rail; composite bottom rail.

B. Core: Polyurethane core for stable insulation.

2.3 FIBERLAST ENTRANCE DOORS

A. Thickness: 1-3/4 inch.

B. Style: Paneled and Glass.

C. Shape: Squared Top.
1. Panels per Face: Two.
2. Top Panel Shape: Squared.

D. Finish: Smooth white, factory primed

E. Hardware: None. Prep door for owner supplied hinge and lockset.

2.4 PREHUNG HARDWOOD SYSTEMS

A. Profile: System 01, Single Door

B. Jamb: Solid pine Auralast wood.

1. Width: 6-9/16 inch.
2. Profile: Rabbeted.

C. Casing: 5/4 head and jamb casing. Refer to drawings for details.

D. Hinges: Solid brass concealed-bearing.

1. Size: 4 by 4 square.
2. Finish: Satin Nickel.

E. Sills: Aluminum with Polished Aluminum Finish.

2.5 GLAZING

A. Glass Type: High-performance Low-E insulating glass

B. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and of ASTM E 1886.

C. Options:

1. Fixed Grilles: Wide style, 7/8 inch bar with white finish. See drawings for configuration.

D. Sidelight Glazing Shape:

1. FiberLast, Smooth White FL-692

2.6 CONSTRUCTION ACCESSORIES

A. Flashing: Refer to Section 07446

B. Sealants: Provide manufacturer recommended sealants maintain watertight conditions.

2.7 FABRICATION

A. Skins are adhered to engineered wood frames with core materials and bonding agents that permanently lock skin to frame.

PART 3 - EXECUTION

3.1 GENERAL

A. Install doors in accordance with manufacturer's installation guidelines and recommendations.

3.2 EXAMINATION

A. Inspect door prior to installation.

B. Inspect rough opening for compliance with door manufacturer recommendations. Verify rough opening conditions are within recommended tolerances.

3.3 INSTALLATION

A. Install jamb assembly.

1. Caulk sill along outside edge and ½ inch in from edge of subfloor.
2. Set door unit into center of opening and tack in place.
3. Shim hinge then latch side jambs straight. Inspect jamb for square, level and plumb.
4. Shim and fasten top of unit where sidelight joins door jamb.
5. Fasten hinge side jamb to studs.
6. Verify door opens freely and weatherstrip meets door evenly.
7. Verify door sweep contacts threshold evenly.
8. Fasten latch side jamb to studs.

B. Caulk outside perimeter of door unit between trim / casing and wall face, along front side of threshold, and between jamb sides and threshold.

3.4 PROTECTION

A. Protect installed doors from damage.

END OF SECTION

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 GENERAL

1.1 RELATED SECTIONS

A. Section 061000 - Rough Carpentry: Roof framing and opening support.

1.2 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Manufacturer's data sheets, including:
1. Energy Star Brochure.
2. Installation Instructions.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store attic access door hatch in manufacturer's unopened packaging until ready for installation.

B. Store attic access door hatch until installation inside under cover in dry area out of direct sunlight.

1.4 WARRANTY

A. Limited Warranty: One year against defective material and workmanship, covering parts only, no labor or freight. Defective parts, if deemed so by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant which warrants same.

1.5 PERFORMANCE

A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 tested according to the following test method:

1)NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically.
2)NFPA 288 for fire-rated access door assemblies installed horizontally.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Battic Door Energy Conservation Products.
Box 15, Mansfield, MA 02048-0015 U.S.A.
Phone: (508) 320-9082; Fax: (508) 339-4571
info@batticdoor,com; www.batticdoor.com

2.2 FABRICATION

A. Manufacture each access panel assembly as an integral unit ready for installation.

2.3 OVERVIEW OF PRODUCT

A. Model 22 x 30 Deluxe Attic Access Door System is an R-42 insulated and triple-gasketed access door that installs in minutes and provides an air sealed, insulated access opening to residential attic space. Deluxe model comes with 2 recessed handles and a 4 point, keyed, locking latch designed for when handles and / or security is desired. Also may be used in knee wall applications. Fire-rated.

2.4 MATERIALS

A. Wood frame and door. Unit installs into a 22-5/8” x 30-1/2” framed opening. Fits within the standard space between trusses spaced 24' o.c. or joists 16" o.c. to simplify installation. Pre-painted white door face and trim. R-42 insulated door core is Extruded Polystyrene (EPS). Door face is gloss white mineral board. Triple rubber gaskets provided for air tight seal. Solid wood frame and trim. Two recessed handles and a 4 point, keyed, locking latch included.

2.5 ACCESS DOOR AND FRAME FOR ATTIC ACCESS

A. Assembly Description: Fabricate door to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal. Provide self-latching door with automatic closer and interior latch release.
B. Provide frame with gypsum board beads for concealed flange installation.
C. Locations: Ceiling
D. Fire-Resistance Rating: 1 hour

PART 3 EXECUTION

3.1 EXAMINATION

A. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

B. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.3 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 083313

SECTION 083610 RESIDENTIAL OVERHEAD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES:
1.2

A. Residential Metal Overhead Doors.

1.3 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete: Prepared opening in concrete. Execution requirements for placement of anchors in concrete wall construction.

B. Section 05500 - Metal Fabrications: Steel frame and supports.

C. Section 06100 - Wood Blocking and Curbing: Rough wood framing and blocking for door opening.

D. Section 07900 - Joint Sealers: Perimeter sealant and backup materials.

1.4 REFERENCES

A. ANSI/DASMA 108 - Standard Method for Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference

B. UL: Underwriters Laboratories, Inc.

1.5 DESIGN / PERFORMANCE REQUIREMENTS

A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.

B. Manual operation.

1.6 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Operation and Maintenance Data.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened labeled packaging until ready for installation.

B. Protect materials from exposure to moisture until ready for installation.

C. Store materials in a dry, ventilated weathertight location.

D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.9 WARRANTY

A. Thermacore 190 Series. Warranty: Limited lifetime against splitting and cracking, 10 year against delamination of polyurethane foam from steel face and all other components for 1 year.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121 Bus., Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 929-3667. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: info@overheaddoor.com.

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 RESIDENTIAL METAL OVERHEAD DOORS

A. Insulated Steel Sectional Overhead Doors: Thermacore 190 Series Insulated Steel Doors by Overhead Door Corporation.
   1. Door Assembly: Rigid steel fully insulated construction with a metal foam metal sandwich panel. Fabricated with EPDM seals between sections.
      a. Size: As indicated on the Drawings.
      b. Panel Thickness: 1-3/8 inches (34.93 mm).

c. Panel Style: Shiplap panels. Flush
d. Exterior Steel: .012 inch (.030 mm) nominal, high strength hot dipped galvanized steel with an embossed wood grain texture.
e. Insulation: CFC-free foamed in place polyurethane.
f. Thermal Values: R-value of 12.76.
g. Windload Design: Provide to meet the Design/Performance requirements per building code.
h. Window Design: None.

2. Finish/Color: Two coat baked-on polyester. Color selected by Architect from manufacturer's standard color selection.
3. Hardware: Standard hinges.
4. Lock:
   a. Interior mounted slide lock.
5. Bottom fixture: DASMA 103 red-head fasteners.
6. Weatherstripping: Co-extruded EPDM bulb-type strip at bottom.
7. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
8. Standard rollers.
9. Manual Operation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until openings and substrates have been properly prepared.

B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

C. Verify electric power is available and of correct characteristics.

D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install overhead doors, track and openers in accordance with approved shop drawings and the manufacturer's printed instructions.

B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

C. Anchor assembly to wall construction and building framing without distortion or stress.

D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

E. Fit and align door assembly including hardware.

3.4 CLEANING AND ADJUSTING

A. Adjust door assembly to smooth operation and in full contact with weatherstripping.

B. Clean doors, frames and glass.

C. Remove temporary labels and visible markings.

3.5 PROTECTION

A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

B. Protect installed products until completion of project.

C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

END OF SECTION 083610

SECTION 085313 - VINYL WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes vinyl-framed windows.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

C. Product Schedule: For vinyl windows. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample warranties.

1.4 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

B. All windows to be Energy Star Rated.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace vinyl windows that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

a. Window: 10 years from date of Substantial Completion.
b. Glazing Units: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:

1. CertainTeed Corporation.
2. Harvey Building Products
3. JELD-WEN, Inc.
4. Kolbe & Kolbe Millwork Co., Inc.
5. Pella Corporation.

C. Product Standard: AAMA/WDMA/CSA 101/I.S.2/A440.

1. Minimum Performance Class: [**R**] [**LC**] [**CW**] [**As indicated on Drawings**] <**Insert class**>.
2. Minimum Performance Grade: [**15**] [**20**] [**25**] [**30**] [**35**] [**40**] [**45**] [**50**] [**As indicated on Drawings**] <**Insert grade**>.

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of .32.

E. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and of ASTM E 1886.

2.2 VINYL WINDOWS

A. Operating Types: Double Hung

B. Frames and Sashes: Impact-resistant, UV-stabilized PVC complying with AAMA/WDMA/CSA 101/I.S.2/A440.

1. Finish: Integral color, [**white**] [**beige**] [**sandstone**] <**Insert finish**>.
2. Gypsum Board Returns: Provide at interior face of frame.

C. Insulating-Glass Units: ASTM E 2190.

1. Glass: ASTM C 1036, Type 1, Class 1, q3.

   a. Tint: Clear.
   b. Kind: Fully tempered where indicated on Drawings.

2. Lites: As indicated on Drawings.
3. Filling: Fill space between glass lites with argon.
4. Low-E Coating
5. Design Pressure: rated for Exposure C, components & cladding

Zone 4 10 sq. ft.: 31.3-34.0 psf
20 sq. ft.: 29.9-32.5 psf
50 sq. ft.: 28.1-30.7 psf
100 sq. ft: 26.6-3-29.3 psf

Zone 5 10 sq. ft.: 31.3-42.0 psf
20 sq. ft.: 29.9-39.2 psf
50 sq. ft.: 28.1-35.5 psf
100 sq. ft: 26.6-3-32.5 psf

D. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

E. Hardware, General: Manufacturer's standard corrosion-resistant material sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.

F. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

G. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to the greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.3 ACCESSORIES

A. Dividers (False Muntins): Provide divider grilles in designs indicated for each sash lite.
1. Material: Manufacturer's standard.
2. Pattern: As indicated on Drawings.
3. Profile: As selected by Architect from manufacturer's full range.
4. Color: As selected by Architect from manufacturer's full range.

2.4 INSECT SCREENS

A. General: Fabricate insect screens to fully integrate with window frame. Provide screen for each operable exterior sash. Screen wickets are not permitted.

1. Type and Location: Half, outside for single-hung sashes.

B. Aluminum Frames: Complying with SMA 1004 or SMA 1201.
1. Finish for Exterior Screens: Baked-on organic coating in color selected by Architect from manufacturer's full range.

C. Glass-Fiber Mesh Fabric: 18-by-14 (1.1-by-1.4-mm) or 18-by-16 (1.0-by-1.1-mm) <**Insert type**> mesh complying with ASTM D 3656.

1. Mesh Color: Manufacturer's standard.

2.5 FABRICATION

A. Fabricate vinyl windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

B. Glaze vinyl windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Provide mullions and cover plates, compatible with window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units. Provide manufacturer's standard finish to match window units.

E. Mount hardware through double walls of vinyl extrusions or provide corrosion-resistant reinforcement.

F. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E 2112.

B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

D. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.

E. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 085313

SECTION 087100 – DOOR HARDWARE

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 commercial door hardware for the following:

1. Swinging doors.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.

C. Related Sections:

1. Division 08 Section “Stile and Rail Wood Doors”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 80 - Fire Doors and Windows.
4. NFPA 101 - Life Safety Code.
5. NFPA 105 - Installation of Smoke Door Assemblies.
6. UL/ULC and CSA C22.2 – Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards:

1. ANSI/BHMA Certified Product Standards - A156 Series
2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:

a. Type, style, function, size, label, hand, and finish of each door hardware item.
b. Manufacturer of each item.
c. Fastenings and other pertinent information.
d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
e. Explanation of abbreviations, symbols, and codes contained in schedule.
f. Mounting locations for door hardware.
g. Door and frame sizes and materials.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.

2. Electrical Coordination: Coordinate with related Division 26 Electrical Sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.

E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

F. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing both standard and electrified builders hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor in good standing by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedules.

D. Source Limitations: Obtain each type and variety of Door Hardware specified in this Section from a single source, qualified supplier unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

E. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:

1. NFPA 70 "National Electrical Code", including electrical components, devices, and accessories listed and labeled as defined in Article 100 by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

2. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:

   a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
   b. Door Closers: Comply with the following maximum opening-force requirements indicated:

      1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
      2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

   c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.

3. NFPA 101: Comply with the following for means of egress doors:

   a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.

   b. Thresholds: Not more than 1/2 inch high.

4. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.

   a. Test Pressure: Positive pressure labeling.

F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.

5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Related Division 08 Sections (Steel, Aluminum and Wood) doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:
1. Twenty five years for manual surface door closers.
2. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Continuing Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (6) months full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

B. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.

1. Acceptable Manufacturers:

a. Bommer Industries (BO).
b. Hager Companies (HA).
c. McKinney Products (MK).
d. Stanley Hardware (ST).

2.3 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified automatic, self-latching, and manual flush bolts and surface bolts. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

1. Acceptable Manufacturers:

a. Burns Manufacturing (BU).
b. Door Controls International (DC).
c. Ives (IV).
d. Rockwood Manufacturing (RO).
e. Trimco (TC).

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

C. Cylinders: Original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
5. Keyway: Manufacturer’s Standard.

D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

E. Patented Cylinders: ANSI/BHMA A156.5, Grade 1, certified patented cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer’s United States patents. Cylinders are to be factory keyed with owner having the ability for on-site original key cutting.

1. Acceptable Manufacturers:

a. Corbin Russwin (CR) Pyramid Series.
b. Medeco (MC) - X4 Series.
c. Sargent Manufacturing (SA) - XC Series.
d. Schlage Lock (SC) - Everest D Series.

A. Keying System: Each type of lock and cylinders to be factory keyed. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
B. **All keying systems shall be coordinated with the Owner.**
C. Provide 2-level master keying system As follows:

1) Provide change keys for each individual living unit, operating each exterior door including sheds doors. All change keys for each individual living unit shall be keyed alike.
2) Provide master keys, operating all living unit locks.

F. Key Quantity: Provide the following minimum number of keys:

1. All Master Key Levels: Six (6)
2. Change Keys per Cylinder: Two (2)
3. Construction Keys: Ten (10)
4. Construction Control Keys: Two (2)
5. Permanent Control Keys: Two (2)

G. Construction Keying: Provide construction master keyed cylinders or temporary keyed construction cores where specified. Provide construction master keys in quantity as required by project Contractor. Replace construction cores with permanent cores. Furnish permanent cores for installation as directed under specified "Keying Conference".

H. Key Registration List: Provide keying transcript list to Owner's representative in the proper format for importing into key control software.

I. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Acceptable Manufacturers:

a. Lund Equipment (LU).
b. MMF Industries (MM).
c. Telkee (TK).

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets furnished in the functions as specified in the Hardware Sets. Locksets to be manufactured with a corrosion resistant, stamped 12 gauge minimum formed steel case and be field-reversible for handing without disassembly of the lock body. Lockset trim (including knobs, levers, escutcheons, roses) to be the product of a single manufacturer. Furnish with standard 2 3/4" backset, 3/4" throw anti-friction stainless steel latchbolt, and a full 1" throw stainless steel bolt for deadbolt functions.

1. Acceptable Manufacturers:

a. Corbin Russwin Hardware (RU) – ML2000 Series.
b. Sargent Manufacturing (SA) – 8200 Series.
c. Schlage (SC) – L9000 Series.
d. Yale Locks and Hardware (YA) – 8800FL Series.

B. Lock Trim Design: As specified in Hardware Sets.

2.6 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

2.7 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM E 1408.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Acceptable Manufacturers:

1. Pemko Manufacturing (PE).

2.8 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.9 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SCHEDULE

A. The hardware sets represent the design intent and direction of the Owner and Architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality. All hardware to be ADA compliant.

B. Pre-hung exterior doors to provide comparable hardware as specified below.

C. Lockset Designs - Provide one of the lockset designs designated below (or, if by another manufacturer, one that matches those designated).

<u>Hardware Set #1 - Exterior Doors - Unit Entry Doors, Office Door, Community Room Doors</u>

1-1/2 pair hinges – 4”x4”	By door mfr.
1 Keyed Entrance Lockset	Schlage H110 Manhattan Interconnected Locks (Lever Handle)
1 Sweep	Pemko 307AV
1 Weatherstrip	Pemko 297 AV
1 Doorstop	Ives 60

<u>Hardware Set #2 - Bedrooms</u>

1-1/2 pair hinges – 3.5”x3.5”	By door mfr.
1 Privacy Set	Schlage F40 Manhattan (Lever Handle)
1 Doorstop	Ives 60 (Base) or Ives 69 (Hinge pin)

<u>Hardware Set #3 – Interior Closets</u>

1-1/2 pair hinges – 3.5”x3.5”	By door mfr.
1 Passage Set	Schlage F10 Manhattan
1 Doorstop	Ives 60 (Base) or Ives 69 (Hinge pin)

Hardware Set #4A – Mechanical Closets

1-1/2 pair hinges – 3.5”x3.5”	By door mfr.
1 Keyed Entrance Lock (Master Keyed)	Schlage F51 Manhattan (Lever Handle with knurling, tactile warning on outside lever)
1 Doorstop	Ives 60 (Base) or Ives 69 (Hinge pin)

Hardware Set #5 - Bathrooms

1-1/2 pair hinges – 3.5”x3.5”	By door mfr.
1 Privacy Set	Schlage F40 Manhattan
1 Door Stop	Ives 60 (Base) or Ives 69 (Hinge pin)
1 Threshold (accessible)	Carpet-to-VCT or VCT-to-VCT Transition strip/threshold

Hardware Set #6 - Laundry Closet

1-1/2 pair hinges - 4”x4”	By door mfr.
1 Dummy Set	Schlage F40 Manhattan (Lever Handle)
2 magnetic ball latches	
2 Doorstops	Ives 60

Hardware Set # – Exterior Shed Doors

1-1/2 pair hinges - 4”x4” – Stainless Steel	By door mfr.
Crash Stop	Ives CS115
1 Keyed Entrance Lockset	Schlage F40 Manhattan (Lever handle)

Note: All exterior shed door hardware to be weather / corrosion-resistant

3.9 HARDWARE FINISHES

A. Hardware finish numbers are the BHMA industry standards. Provide the following hardware finishes:
   1. Typical: 626 – Satin Chromium plated, US26D.
   2. Exterior Sheds: 630 – Satin stainless steel, US32D.
   3. Provide tactile warning (knurling) on outside door handles at mechanical closet doors in all living units.

END OF SECTION 087100

SECTION 088000 – GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Glass and glazing for sections referencing this section for Products and installation.

1.2 SYSTEM DESCRIPTION

A. Glass and glazing materials of this section shall provide continuity of building enclosure air barrier and vapor retarder.

B. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass.

C. Provide glazing systems capable of withstanding normal thermal movements, wind loads and impact loads, without failure, including loss due to defective manufacture, fabrication and installation; deterioration of glazing materials; and other defects in construction.

D. Air Leakage Performance Criteria: when tested at a static air pressure of 1.567 psf, the rate of air leakage shall not exceed ½ cfm per foot of crack length. ASTM E 283-91

E. Water Infiltration Minimum Performance Criteria: no water shall pass the interior face of the unit when tested at a static pressure of 2.86 psf with water applied at the rate of 5.0 U.S. gal. per sq. ft. per hour for a time period of 15 minutes. ASTM E 331-86

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with FGMA Glazing Manual for glazing installation methods.

B. Glass fabricator to have a minimum of ten (10) years experience and meet ANSI/ISO/ASQC 9002-1994.

C. Insulating Glass products are to be permanently marked either on spaces or at least one insulating unit component with appropriate certification label of inspecting and testing agency of the Insulating Glass Certification Council (IGCC).

1.4 WARRANTY

A. Provide five-year warranty under provisions of Section 01100 including coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement.

PART 2 - PRODUCTS

2.1 SEALED INSULATING GLASS MATERIALS

A. Insulated Glass Units (Type SG-A): ASTM E774 and E773; double pane with glass elastomer edge seal; purge interpane space with dry air; total unit thickness of 7/8 inch, Argon filled with Low-E coating with minimum 5/8 inch air space.

B. Color: to be selected by Architect from manufacturer's standard selection of colors/tints.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Glazing shall comply with Glazing Manual FGMA 1986

B. Glazing shall comply with Glazing Sealing Systems Manual FGMA 1990

3.2 EXAMINATION

A. Verify openings for glazing are correctly sized and within tolerance

B. Verify that a functioning weep is present.

C. Verify that the minimum required face and edge clearances are being followed.

D. Do no proceed with lazing until unsatisfactory conditions have been corrected.

E. Remove and replace glass that is broken, chipped, cracked or damaged; protect glass from edge damage during handling and installation.

3.3 CLEANING

A. Remove labels after Work is complete.

B. Clean glass and adjacent surfaces.

END OF SECTION 088000

SECTION 092613 - GYPSUM VENEER PLASTERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gypsum veneer plaster and gypsum base for veneer plaster.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain gypsum veneer plaster products, including gypsum base for veneer plaster, joint reinforcing tape, and embedding material, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 GYPSUM VENEER PLASTER

A. One-Component Gypsum Veneer Plaster: ASTM C 587, ready-mixed, smooth, finish-coat veneer plaster formulated for application directly over substrate without use of separate base-coat material.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Georgia-Pacific Gypsum LLC, Subsidiary of Georgia Pacific
b. National Gypsum Company;
c. USG Corporation; Diamond Interior Finish Plaster.

B. High-Strength, One-Component Gypsum Veneer Plaster: ASTM C 587, ready-mixed, smooth, finish-coat veneer plaster containing mill-mixed, fine silica sand; with a compressive strength of 3000 psi (20 MPa) when tested according to ASTM C 472; and formulated for application directly over substrate without use of separate base-coat material.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. USG Corporation; Imperial Finish Plaster.

C. Two-Component Gypsum Veneer Plaster: ASTM C 587, with separate formulations; one for base-coat application and one for finish-coat application over substrates.

1. Base Coat:

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) National Gypsum Company; Kal-Kote Plaster Base.
2) USG Corporation; Diamond Veneer Basecoat Plaster.

2. Smooth Finish Coat:

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) National Gypsum Company; Uni-Kal Plaster.
2) USG Corporation; Diamond Interior Finish Plaster.

2.4 PANEL PRODUCTS

A. Regional Materials: Gypsum panel products shall be manufactured within 500 miles (800 km) of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.

B. Regional Materials: Gypsum panel products shall be manufactured within 500 miles (800 km) of Project site.

C. Gypsum Base for Veneer Plaster: ASTM C 1396/C 1396M.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Corp.; ProRoc Veneer Plaster Base.
b. Georgia-Pacific Gypsum LLC, Subsidiary of Georgia Pacific; Tough Rock Veneer Plaster Base.
c. Lafarge North America Inc.; Plasterbase.
d. National Gypsum Company; Kal-Core Regular.
e. USG Corporation; Imperial Regular Gypsum Base.

2. Thickness: As indicated.

D. Gypsum Base for Veneer Plaster, Type X: ASTM C 1396/C 1396M.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Corp.; ProRoc Veneer Plaster Base, Type X.
b. Georgia-Pacific Gypsum LLC, Subsidiary of Georgia Pacific; Tough Rock Fireguard Veneer Plaster Base.
c. National Gypsum Company; Kal-Core Fire-Shield, Type X.
d. USG Corporation; Imperial Firecode Gypsum Base.

2. Thickness: 5/8 inch (15.9 mm).

E. Glass-Mat Interior Gypsum Board: ASTM C 1658/C 1658M. With moisture- and mold-resistant core; glass-mat facing on both sides of panel.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Georgia-Pacific Gypsum LLC, Subsidiary of Georgia Pacific; DensArmor Plus Interior Panel.

2. Core: 1/2 inch (12.7 mm), regular type.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

F. Backing Panels for Multilayer Applications: ASTM C 1396/C 1396M gypsum base or gypsum board, as recommended by gypsum veneer plaster manufacturer, for application method and thicknesses indicated.

1. Core: Matching face layer unless otherwise indicated.
2. Thickness: Matching face layer unless otherwise indicated.

2.5 TRIM ACCESSORIES

A. Standard Trim: ASTM C 1047, provided or approved by manufacturer for use in gypsum veneer plaster applications indicated.

1. Material: Galvanized-steel sheet or aluminum-coated steel sheet; rolled zinc, plastic, or paper-faced galvanized-steel sheet.

2.6 JOINT REINFORCING MATERIALS

A. General: Comply with joint strength requirements in ASTM C 587 and with gypsum veneer plaster manufacturer's written recommendations for each application indicated.

B. Joint Tape: As recommended by gypsum veneer plaster manufacturer for applications indicated.

C. Embedding Material for Joint Tape: As recommended by gypsum veneer plaster manufacturer for use with joint-tape material and gypsum veneer plaster applications indicated.

2.7 AUXILIARY MATERIALS

A. Bonding Agent: ASTM C 631, polyvinyl acetate.

B. Laminating Adhesive: Adhesive or joint compound recommended by manufacturer for directly adhering gypsum-base, face-layer panels to backing-layer panels in multilayer construction.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

D. Acoustical Joint Sealant: As specified in Section 079200 "Joint Sealants."

E. Patching Mortar: Dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing

PART 3 - EXECUTION

3.1 INSTALLING PANELS

A. Gypsum Base for Veneer Plaster: Apply according to ASTM C 844 unless manufacturer's written recommendations are more stringent.

1. Erection Tolerance: No more than 1/16-inch (1.6-mm) offsets between planes of gypsum base panels, and 1/8 inch in 8 feet (3 mm in 2.4 m) noncumulative, for level, plumb, warp, and bow.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.

C. Install trim with back flanges intended for fasteners, and attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

D. Control Joints: Install at locations indicated on Drawings.

E. Gypsum Base: Reinforce interior angles and flat joints with joint tape and embedding material to comply with ASTM C 843 and with gypsum veneer plaster manufacturer's written recommendations.

F. Abuse-Resistant Base: Reinforce joints between abuse-resistant panels with joint tape and embedding material according to panel manufacturer's written recommendations.

G. Glass-Mat Interior Gypsum Board: Reinforce joints between moisture- and mold-resistant panels with joint tape and embedding material according to panel manufacturer's written recommendations.

END OF SECTION 092613

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Tile backing panels.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Low Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 GYPSUM BOARD, GENERAL

2.3 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. American Gypsum.
2. CertainTeed Corp.
3. Georgia-Pacific Gypsum LLC.
4. USG Corporation.

B. Gypsum Wallboard: ASTM C 1396/C 1396M.

1. Thickness: 1/2 inch (12.7 mm).
2. Long Edges: Tapered.

C. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

D. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

1. Thickness: 1/2 inch (12.7 mm).
2. Long Edges: Tapered.

E. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: As indicated.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Corp.; GlasRoc Tile Backer.
b. Georgia-Pacific Gypsum LLC; DensShield Tile Backer.

2. Core: As indicated on Drawings.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

B. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. C-Cure; C-Cure Board 990.
b. CertainTeed Corp.; FiberCement
c. James Hardie Building Products, Inc.
d. National Gypsum Company, Permabase Cement Board.
e. USG Corporation; DUROCK Cement Board.

2. Thickness: 1/2 inch (12.7 mm).
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

C. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. American Gypsum.
   b. CertainTeed Corp.
   c. Georgia-Pacific Gypsum LLC.
   d. USG Corporation.

2. Core: As indicated on Drawings.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

   1. Interior Gypsum Board: Paper.
   2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
   3. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

2.6 AUXILIARY MATERIALS

A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

   1. Laminating adhesive shall have a VOC content of [**50**] <**Insert value**> g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing).

D. Acoustical Joint Sealant: ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings as demonstrated by testing according to ASTM E 90.

   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

      a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
      b. Grabber Construction Products; Acoustical Sealant GSC.
      c. Pecora Corporation; AC-20 FTR.
      d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.

e. USG Corporation; SHEETROCK Acoustical Sealant.

2. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Acoustical joint sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

F. Vapor Retarder: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS

A. Comply with ASTM C 840.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

D. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

1. Aluminum Trim: Install in locations indicated on Drawings.
2. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

E. Prefill open joints and damaged surface areas.

F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile Where indicated on Drawings.
3. Level 3: Where indicated on Drawings.
4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

5. Level 5: Where indicated on Drawings.

    a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

H. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

I. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

SECTION 093013 - CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ceramic mosaic tile.
2. Glazed wall tile.
3. Stone thresholds.
4. Tile backing panels.
5. Waterproof membrane for thinset applications.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples:

1. Each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide samples of each color blend.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.
3. Stone thresholds.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:
1. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.

2. Installer employs installers recognized by the U.S. Department of Labor as Journeyman Tile Layers.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of floor tile installation.
2. Build mockup of wall tile installation.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

2.2 TILE PRODUCTS

A. Ceramic Tile Type: Factory-mounted unglazed ceramic mosaic tile.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:

   a. American Marazzi Tile, Inc.
   b. American Olean Corporation.
   c. Crossville, Inc.
   d. Dal-Tile Corporation.
   e. Interceramic.

3. Composition: Porcelain.
4. Certification: Porcelain tile certified by the Porcelain Tile Certification Agency.
5. Module Size: 2 by 2 inches (50.8 by 50.8 mm).
6. Thickness: 1/4 inch (6.4 mm).
7. Face: Plain with cushion edges.
8. Surface: Slip resistant, with abrasive admixture.
9. Dynamic Coefficient of Friction: Not less than 0.42.
10. Finish: Mat, opaque glaze.
11. Tile Color and Pattern: black and white mosiac.

12. Grout Color: As selected by Architect from manufacturer's full range.
13. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

    a. Base Cove: Cove, module size 4 by 4 inch.
    b. External Corners for Thinset Mortar Installations: , module size 2 by 2 inch.
    c. Internal Corners: Cove, module size 2 by 2 inch.
    d. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch (12.7 to 6.4 mm) across nominal 4-inch (100-mm) dimension.

B. Ceramic Tile Type: Glazed wall tile.

1. Manufacturers: Subject to compliance with requirements, [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

    a. American Marazzi Tile, Inc.
    b. American Olean Corporation.
    c. Dal-Tile Corporation.
    d. Jeffrey Court Inc.
    e. Porcelanite.
    f. Seneca Tiles, Inc.

3. Module Size: 4-1/4 by 4-1/4 inches (108 by 108 mm).
4. Face Size Variation: Rectified.
5. Thickness: 5/16 inch (8 mm).
6. Face: Plain with modified square edges or cushion edges.
7. Finish: Mat, opaque glaze.
8. Tile Color and Pattern: As selected by Architect from manufacturer's full range.
9. Grout Color: As selected by Architect from manufacturer's full range.
10. Mounting: Factory, back mounted.
11. Mounting: Pregrouted sheets of tiles are factory assembled and grouted with manufacturer's standard white silicone rubber.
12. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

    a. Base: Coved, module size 4-1/4 by 4-1/4 inches (108 by 108 mm).
    b. Internal Corners: Field-butted square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

C. Accessories: Provide vitreous china accessories of type and size indicated, suitable for installing by same method as used for adjoining wall tile.

1. One soap holder for each shower and tub indicated.

2. Color and Finish: Match adjoining glazed wall tile.

2.3 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch (12.7 mm) or less above adjacent floor surface.

B. Marble Thresholds: ASTM C 503/C 503M, with a minimum abrasion resistance of [**10**] [**12**] according to ASTM C 1353 or ASTM C 241/C 241M and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2.4 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325, Type A.

1. Products: Subject to compliance with requirements, [provide one of the following] :

a. C-Cure; C-Cure Board 990.
b. Custom Building Products; Wonderboard.
c. FinPan, Inc.; ProTEC Concrete Backer Board.
d. USG Corporation; DUROCK Cement Board.

2. Thickness: 1/2 inch (12.7 mm).

B. Fiber-Cement Backer Board: ASTM C 1288.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Corporation; FiberCement BackerBoard.
b. James Hardie Building Products, Inc.; Hardiebacker 500.

2. Thickness: 1/2 inch (12.7 mm).

2.5 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Noble Company (The); Nobleseal TS.
   b. Noble Company (The); Noble Deck.

2. Nominal Thickness: 0.030 inch (0.76 mm).
3. Nominal Thickness: 0.040 inch (1 mm).

C. Fabric-Reinforced, Modified-Bituminous Sheet: Self-adhering, SBS-modified-bituminous sheet with fabric reinforcement facing; 0.040-inch (1 -mm) nominal thickness.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Boiardi Products Corporation, a QEP company; Elastiment 340 Sound Control Sheet Membrane Waterproofing and Anti-Fracture/Crack Suppression System.
   b. National Applied Construction Products, Inc.; Strataflex.

D. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Ardex Americas; Ardex S 1-K One-Component Waterproofing Compound.
   b. Boiardi Products Corporation, a QEP company; Elastiment 644 Membrane Waterproofing System.
   c. Bonsal American, an Oldcastle company; B 6000 Waterproof-Crack Isolation Membrane.

E. Latex-Portland Cement Waterproof Mortar: Flexible, waterproof mortar consisting of cement-based mix and latex additive.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Ardex Americas; Ardex 8+9 Waterproofing Compound.
   b. Boiardi Products Corporation, a QEP company; Elastiment 323 Cement Based Waterproofing, Anti-Fracture/Crack Suppression Membrane.
   c. C-Cure; UltraCure 971.
   d. MAPEI Corporation; Mapelastic 315.

2.6 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

2.7 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

B. Dry-Set Portland Cement Mortar (Thinset): ANSI A118.1.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:

   a. Boiardi Products Corporation; a QEP company.
   b. Bonsal American; an Oldcastle company.
   c. Bostik, Inc.
   d. C-Cure.
   e. Custom Building Products.

3. For wall applications, provide nonsagging mortar.

C. Latex-Portland Cement Mortar (Thinset): ANSI A118.4.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:

   a. Ardex Americas.
   b. Boiardi Products Corporation; a QEP company.
   c. Bonsal American; an Oldcastle company.
   d. Bostik, Inc.
   e. C-Cure.
   f. Custom Building Products.

3. Provide prepackaged, dry-mortar mix to which only water must be added at Project site.
4. Provide prepackaged, dry-mortar mix combined with liquid-latex additive at Project site.
5. For wall applications, provide nonsagging mortar.

2.8 GROUT MATERIALS

A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.

B. Standard Cement Grout: ANSI A118.6.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:

   a. Boiardi Products Corporation; a QEP company.
   b. Bonsal American; an Oldcastle company.
   c. Bostik, Inc.
   d. C-Cure.
   e. Custom Building Products.
   f. Jamo Inc.
   g. Laticrete International, Inc.
   h. MAPEI Corporation.

2.9 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; half-hard brass exposed-edge material.

C. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

      a. Bonsal American, an Oldcastle company; Grout Sealer.
      b. Custom Building Products; Grout Sealer.
      c. Jamo Inc.; Grout Sealer.
      d. Southern Grouts & Mortars, Inc.; Grout Sealer.

   2. Grout sealers shall comply with requirements of FloorScore certification.
   3. Grout sealers shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Small-Scale Environmental Chambers."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
2. Verify that concrete substrates for tile floors installed with bonded mortar bed or thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

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

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 CERAMIC TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:

   a. Exterior tile floors.
   b. Tile floors in wet areas.
   c. Tile swimming pool decks.
   d. Tile floors in laundries.
   e. Tile floors consisting of tiles 8 by 8 inches (200 by 200 mm) or larger.
   f. Tile floors consisting of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for

straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Where accent tile differs in thickness from field tile, vary setting bed thickness so that tiles are flush.

F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Ceramic Mosaic Tile: 1/16 inch (1.6 mm).
2. Glazed Wall Tile: 1/16 inch (1.6 mm).
3. Porcelain Tile: 1/4 inch (6.4 mm).

H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

J. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thinset).

K. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

L. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

M. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

3.4 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Ceramic Tile Installation: TCNA F125A; thinset mortar on crack isolation membrane.

a. Ceramic Tile Type: mosaic and porcelain tile.
b. Thinset Mortar: Latex-portland cement mortar.
c. Grout: Standard sanded cement grout.

END OF SECTION 093013

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vinyl Floor Plank

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: Full-size units of each color and pattern of floor tile required.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. FloorScore Compliance: Resilient tile flooring shall comply with requirements of FloorScore certification.

C. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.2 LUXURY VINYL TILE (LVT)

A. Products: Subject to compliance with requirements, provide one of the following:

1. Armstrong World Industries, Inc
2. Congoleum Corporation
3. Decoria, Inc.

B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.

C. Wearing Surface: Embossed. Mininum wear layer of 12 mil for units, 20 mil for common areas and offices.

D. Thickness: 0.125 inch (3.2 mm).

E. Size: 3-4 inch width in units, 5-6 inch in common areas and offices.

F. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 INSTALLATION MATERIALS

A. Trowel Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

1. Adhesives shall comply with the following limits for VOC content:

a. Vinyl Composition Tile Adhesives: 50 g/L or less.

2. Adhesives shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. General Contractor and Flooring Subcontractor responsible for highlighting any floor prep required for installation in rehabilitation projects.
2. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
3. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.

4. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
5. Moisture Testing: Proceed with installation only after substrates pass testing according to floor tile manufacturer's written recommendations, but not less stringent than the following:

    a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
    b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.

C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.

D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

E. Do not install floor tiles until they are the same temperature as the space where they are to be installed.

F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.2 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

    1. Lay tiles square with room axis.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

    1. Lay tiles in pattern of colors and sizes indicated.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.3 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.

1. Apply two coat(s).

C. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 099123 - PAINT

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Surface preparations and field application of paints and coatings.

1.2 SYSTEM DESCRIPTION

A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.3 SUBMITTALS

A. Product Data: Provide data on all finishing products.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Store and apply materials in environmental conditions required by manufacturer's instructions.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide primer and undercoat paint produced by same manufacturer as the finish coats.

B. Field Samples: Provide full-coat mock ups of specified color selections for approval of Architect.

1. Interior: Paint entirely one complete room, including all walls, ceiling and trim.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Acceptable Manufacturers:

1. Benjamin Moore Paints
2. Pratt & Lambert Paints
3. Sherwin Williams
4. Or as approved by Owner.

B. Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

C. Compatibility: Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

1. All paint materials and equipment shall be compatible in use, with finish coats compatible with prime coats; prime coats compatible with surface to be coated; and all tools and equipment compatible with the coating to be applied.
2. Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
3. Thinners, when used, shall be only those thinners recommended for that purpose by the manufacturer of the material to be thinned. Do thinning according to manufacturer’s printed instructions.

D. Color: Color of all paints and products shall be per samples selected and approved by the Architect and Owner.

E. Mixing and Tinting:
1. Except where specifically noted in this section, all paint shall be ready-mixed and pre-tinted. Agitate all paint prior to and during application to ensure uniform color, gloss, and consistency.
2. Thinner addition shall not exceed manufacturer's printed recommendations. Do not use kerosene or other organic solvents to thin water-based paints.
3. Where paint is to be sprayed, thin according to manufacturer's guidelines.

F. Volatile Organic Compound (VOC) Content: Comply with OTC (Ozone Transport Commission) regulations.

G. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve the finishes specified.

2.2 FINISHES

A. Refer to drawings for paint schedule.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that substrate conditions are ready to receive Work.

B. Measure moisture content of porous surfaces using an electronic moisture meter. Apply finishes per manufacturer’s specifications for maximum moisture content.

C. Correct minor defects and clean surfaces which affect work of this section.

D. Remove electrical plates, hardware, light fixture, trim, escutcheons, and fittings prior to preparing surfaces or finishing.

E. Veneer Plaster Surfaces: Fill minor defects with latex compound. Spot prime defects after repair.

F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

G. Uncoated Ferrous Surfaces: Remove scale by wire brushing, sandblasting, clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint immediately after repairs.

H. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to finishing. Fill nail holes and cracks after primer ahs dried; sand lightly between coats.

I. Exterior Trim Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Fill nail and/or screw holes with manufacturer recommended filler/compound. Apply sealant at all joints between siding and trim around doors and windows.

J. Fiber-cement siding: Field touch-up per manufacturer's specifications to ensure manufacturer's product warranty. Siding to be factory primed and factory finish with full manufacturer's warranty. Colors by Architect.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instruction.

B. Primer to primer application, lightly sand any areas of PVC trim that are shiny, using a very fine sandpaper (#220) grit. Wipe off sanding dust with a damp cloth.

C. Sand transparent finishes lightly between coats to achieve required finish.

D. Where clear finishes are required, tint filler to match wood.

E. Back prime all exterior wood work scheduled to receive paint finish with primer paint. Back prime interior wood work in damp locations such as baths, kitchen sinks.

F. Back prime interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

G. Paint top and bottom edges of all doors.

H. Clean fiberglass and steel doors with TSP (tri-sodium phosphate) solution prior to painting.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to the finishing.

3.4 CLEANING

A. As work proceeds, promptly remove finishes where spilled, splashed, or spattered.

3.5 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHED

A. Metals Fabrications: Including, but not limited to exposed surfaces of railings, galvanized pipe, and steel bollards.

3.6 SCHEDULE - EXTERIOR SURFACES

A. Provide all exterior painting in accordance with the following schedule with the number of coats not less than the number shown on the schedule.

B. Cellular PVC:
1. One coat Sherwin Williams KEM AQUA or equal acrylic latex bonding primer for Plastics
2. Two coats of 100% acrylic latex , semi-gloss with a Light Reflective Value (LRV) of 55 or higher

C. Fiber Cement:
1. Factory pre-primed.
2. Two coats of 100% acrylic latex, semi-gloss.
3. Provide option for factory pre-finished product.

D. Wood – Including, but not limited to, all wood trim, porches, window trim, etc:
1. Apply one coat of EPA approved borate wood preservative prior to applying primer.
2. One coat alkyd primer sealer. Exterior formula paint system.
3. Two coats alkyd Semi-gloss Exterior paint formula system, color by architect.

E. Fiberglass Exterior Doors:
1. If doors skins are factory pre-primed, they do not require an additional prime coat. However, if not pre-primed then provide one coat of acrylic-based primer on doors and/or frames.
2. Two coats of 100% acrylic latex, semi-gloss.

D. Steel - Shop Primed:
1. Touch-up with original primer.
2. Two coats of latex, gloss.

E. Steel - Galvanized:
1. One coat of galvanize metal primer.
2. Two coats of alkyd enamel, gloss.

F. Steel - Ferrous Metal:
1. One coat rust-inhibiting primer (primer coat is not required on shop primed metals).
2. Two coats of alkyd enamel, gloss.

3.7 SCHEDULE - INTERIOR SURFACES

F. Provide all interior painting in accordance with the following schedule with the number of coats not less than the number shown on the schedule.

G. Wood - Transparent:
1. Filler coat (for open grained wood only).
2. One coat of stain.
3. Two coats of varnish, gloss.

H. Steel - Primed:
1. Touch-up with original primer.
2. Two coats of alkyd enamel, gloss.

I. Veneer Plaster:
1. Interior Offices, Kitchens, Closets, Bathrooms and Corridors: (all interior spaces)
   a. All surfaces: One coat of latex/acrylic primer scaler.
   b. Walls: Two coats of latex/acrylic enamel, semi-gloss.
   c. Bathroom Ceilings: Two coats of latex/acrylic enamel; semi-gloss.
   d. Kitchen Ceilings: Two coats of latex/acrylic enamel; flat.

3.8 SCHEDULE - COLORS

A. Exterior:
1. Assume three (3) colors: one field color, one trim color, one accent color.
2. All colors per Architect and Owner.

B. Interior:
1. Assume three colors per room (including ceiling). One color for each of the following, per room:
   a. Ceilings: Flat white.
   b. Doors and Trim: Semi-gloss, color by architect.
   c. Walls: Eggshell, color by architect.

END OF SECTION - 099123

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SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

Revise this Section by deleting and inserting text to meet Project-specific requirements.

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast dimensional characters.
2. Cutout dimensional characters.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For dimensional letter signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.

Retain two subparagraphs below if signs are electrically powered.

4. Show locations of electrical service connections.
5. Include diagrams for power, signal, and control wiring.

C. Samples: For each exposed product and for each color and texture specified.

D. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

Retain "Delegated-Design Submittal" Paragraph below if design services have been delegated to Contractor.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

Verify available warranties and warranty periods for units and components.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products. For an explanation of options and Contractor's product selection procedures, see Section 016000 "Product Requirements."

2.1 DIMENSIONAL CHARACTERS

Retain this article for signs consisting of multiple, individually mounted characters.

Copy "Cast Characters," "Cutout Characters," "Fabricated Channel Characters," and "Molded-Plastic Characters" paragraphs below and re-edit for each product.

Insert number to complete drawing designation for each product required. Use these designations on Drawings to identify each product.

A. Cast Characters: Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:

Retain "Manufacturers" Subparagraph and list of manufacturers below to require products from manufacturers listed or a comparable product from other manufacturers.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Retain "Basis-of-Design Product" Subparagraph and list of manufacturers below to identify a specific product or a comparable product from manufacturers listed. Retain option and delete insert note if manufacturer's name and model number are indicated on Drawings.

2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:

a. ACE Sign Systems, Inc.
b. Allen Markings International.
c. APCO Graphics, Inc.
d. A. R. K. Ramos Signage Systems.
e. ASI Sign Systems, Inc.
f. Diskey Sign Company.
g. Gemini Incorporated.

3. Building and Unit Numbers and/or Letters:
   a. Character Material: Cast aluminum.
   b. Character Height: 4”
   c. Finishes:

Retain "Integral Metal Finish," "Integral Aluminum Finish," "Baked-Enamel or Powder-Coat Finish," and "Overcoat" subparagraphs below as required.

Retain "Integral Metal Finish" Subparagraph for integral finishes on metals other than aluminum.

Retain "Integral Aluminum Finish" Subparagraph below for integral finishes on aluminum. Some manufacturers do not recommend anodized finishes on sand-cast aluminum.

2.2 Integral Aluminum Finish: Anodized color as selected by Architect from full range of industry colors and color densities.

Retain "Baked-Enamel or Powder-Coat Finish" Subparagraph below for applied finish on metals; revise to suit Project.

Retain one option in "Mounting" Subparagraph below; revise to suit Project.

1. Mounting: Countersunk flathead through fasteners.

B. Other: Provide room signage for following spaces. All signs to be ADA compliant, providing visual, tactile and Grade 2 Braille information. All are designed to meet ADA / ADAAG guidelines.
   a. Community Building:
      1) Men’s restroom - square
      2) Women’s restroom - square
      3) Office
      4) Storage Rooms
      5) Water Meter Closet

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:

1. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.

Retain first "Adhesives" Paragraph below if required for LEED-NC, LEED-CI, or LEED-CS Credit IEQ 4.1. VOC content limit is that for multipurpose construction adhesives. Revise VOC content limit based on application; see Section 018113.13 "Sustainable Design Requirements - LEED for New Construction and Major Renovations," Section 018113.16 "Sustainable Design Requirements - LEED for Commercial Interiors," or Section 018113.19 "Sustainable Design Requirements - LEED for Core and Shell Development" for a list of adhesive types and corresponding VOC content limits.

PART 3 - EXECUTION

3.1 INSTALLATION

Retain mounting methods in this article that coordinate with mounting requirements in sign-description paragraphs retained in Part 2.

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
4. Examine the substrates and conditions under which the specialty signs are to be installed and do not proceed with the work until unsatisfactory conditions have been corrected.
5. Locate all signs, building numbers and letters with Owner and Architect in field.
6. Wall or door signs - 60" above floor to comply with ADA Code or UFAS requirements whichever is more stringent.

B. Remove temporary protective coverings and strippable films as signs are installed.

END OF SECTION 101419

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Public-use washroom accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated describing size, finish, details of function and attachement methods.

PART 2 - PRODUCTS

2.1 PUBLIC-USE WASHROOM ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. American Specialties, Inc.
2. Bobrick Washroom Equipment, Inc.
3. Bradley Corporation.

C. Toilet Tissue (Roll) Dispenser
1. Description: Roll-in-reserve dispenser with hinged front secured with tumbler lockset.
2. Mounting: Recessed or Surface mounted as long as UFAS or ADA clearances are not effected.
3. Operation: Noncontrol delivery with standard spindle.
4. Capacity: Designed for 4-1/2- or 5-inch- (114- or 127-mm-) diameter tissue rolls.
5. Material and Finish: Stainless steel, No. 4 finish (satin).
6. ADA compliant.

D. Combination Towel (Folded) Dispenser/Waste Receptacle:
1. Description: Combination unit for dispensing C-fold or multifold towels, with removable waste receptacle.
2. Mounting: Semirecessed.

   a. Designed for nominal 4-inch (100-mm) wall depth.

3. Minimum Towel-Dispenser Capacity: 600 C-fold or 800 multifold paper towels.
4. Minimum Waste-Receptacle Capacity: 4 gal. (15 L).

5. Material and Finish: .
6. Liner: Reusable, vinyl waste-receptacle liner.
7. Lockset: Tumbler type for towel-dispenser compartment and waste receptacle.
8. ADA compliant.

E. Liquid-Soap Dispenser:
1. Description: Designed for dispensing soap in lather form.
2. Mounting: Vertically oriented, surface mounted.
3. Lockset: Tumbler type.
4. Refill Indicator: Window type.
5. ADA compliant.

F. Grab Bar:
1. Mounting: Flanges with concealed fasteners.
2. Material: Stainless steel, 0.05 inch (1.3 mm) thick.

a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.

3. Outside Diameter: 1-1/4 inches (32 mm).
4. Configuration and Length: As indicated on Drawings.
5. ADA compliant.

G. Mirror Unit:
1. Frame: Stainless steel, fixed tilt.

a. Corners: Manufacturer's standard.

2. Integral Shelf: 5 inches (127 mm) deep.

3. Size: 24” x 36”
4. ADA compliant

2.2 DWELLING UNIT ACCESSORY SCHEDULE

A.. Standard medicine cabinet with titling mirror, ADA compliant:

1. Basco, Model #375P-ATM-W; 14”Wx24”Hx3”D rough opening; recessed cabinet; 20 gauge steel body with rust-resistant, baked-on enamel finish; First quality plate glass mirror with two coats of silver and stainless steel frame; 3 adjustable glass shelves

B. Tumbler and toothbrush holder:

1. Bradley, Model #924

C. Soap dish:

1. Bradley, Model #921

D. Toilet tissue dispenser:

1. Bradley, Model #508-32; single roll, non-controlled delivery

E. Towel Bar: Minimum (2) required in each full bathroom

1. Bradley, Model #926; 24” wide, 3/4” round, 3 ¼” projection

F. Shower curtain rod:

1. Bradley, Model #9538-4; concealed mounting; 1” O.D.; 18 gauge stainless steel tubing; 22 gauge stainless steel escutcheons; bright polished finish

G. Double robe hook

1. Bradley, Model #932

H. Grab Bars: Required in all accessible bathrooms

1. Bradley, Model #832 Series; 1 ¼” O.D., 18-gauge stainless steel, seamless construction, safety-grip finish, exposed surfaces in architectural satin finish. Mounting flanges concealed by snap-on escutcheons.

2.3 UNDERLAVATORY GUARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Plumberex Specialty Products, Inc.
2. Truebro by IPS Corporation.

C. Underlavatory Guard :
1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.

2.4 FABRICATION

A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

END OF SECTION 102800

SECTION 104416 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

B. Kitchen range hood suppression canisters.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 COORDINATION

A. Coordinate type and capacity of fire extinguishers with Authority Having Jurisdiction prior to installation and selection of extinguisher type.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each mounting bracket indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Amerex Corporation.
   b. Ansul Incorporated.
   c. Badger Fire Protection.
   d. Kiddie Residential Series

2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.

B. Multipurpose Dry-Chemical Type: UL-rated 2-A:10-B:C, 5 lb nominal capacity, with monoammonium phosphate-based dry chemical in manufacturer's standard enameled container. Seamless aluminum cylinder with pressure gauge.

2.3 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish. UL listed.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

   a. Orientation: Vertical.

2.4 KITCHEN RANGE HOOD SUPPRESSION CANISTERS

A. All kitchen range hood fire suppression systems shall be furnished and installed by the Contractor.

B. Manufacturer: Louisville Fire & Safety

C. Product: StoveTop FireStop Venthood Automatic Fire Suppressor

PART 3 - EXECUTION

3.1 INSTALLATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

1. Mounting Brackets: 54 inches (1372 mm) above finished floor to top of fire extinguisher.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104416

SECTION 105500.13 - USPS-DELIVERY POSTAL SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Mail Receptacles
   2. Parcel lockers.
   3. Collection boxes.
   4. Accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of exposed finish.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Furnish lock keys according to USPS requirements; with temporary identification for their respective locks, bagged, and securely taped inside the collection compartment for shipping.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of postal specialties that fail in materials or workmanship within specified warranty period.

   1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MAIL RECEPTACLES

A. Front-Loading Mail Receptacles: USPS-STD-4C; consisting of multiple compartments with fixed, solid compartment backs, enclosed within a recessed wall box.

   1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:

a. American Eagle Mailboxes.
b. Bommer Industries, Inc.
c. Postal Products Unlimited, Inc.
d. Salsbury Industries.

2. Front-Loading Master Door: Fabricated from extruded aluminum and braced and framed to hold compartment doors; prepared to receive master-door lock.

   a. Master-Door Lock: Door prepared to receive lock provided by local postmaster.

3. Compartments: **As indicated on Drawings.**

   a. Provide a wall mounted horizontal mail box unit with a minimum of 25 Type A standard compartments one (1) mail compartment for each dwelling unit and the management office).

   b. Each with lock and tenant identification as required by USPS-STD-4C. Provide mail slot in the compartment with master-door lock.

   c. Compartment-Door Locks: USPS-L-1172C; with three keys for each compartment door.

   d. Parcel-Locker-Compartment-Door Locks: Two-key security system in which control key provides access to parcel-locker-compartment key, which opens compartment and is retained once opened.

4. Frames: Extruded aluminum or aluminum sheet; ganged and nested units, with cardholder and blank cards for tenant's identification within each compartment.

5. Concealed Components and Mounting Frames: Aluminum or steel sheet.
6. Exposed Aluminum Finish:

   a. Baked-Enamel or Powder-Coated Finish: Color as selected by Architect from manufacturer's full range

7. Install mailboxes in conformance with all applicable regulatory requirements, including but not limited to USPS-STD-4C for wall-mounted centralized mailboxes and Americans with Disabilities Act Accessibility Guidelines (ADAAG).

2.2 FABRICATION

A. Form postal specialties to required shapes and sizes, with true lines and angles, square, rigid, and without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges and corners free of sharp edges and burrs and safe to touch. Fabricate doors of postal specialties to preclude binding, warping, or misalignment.

B. Preassemble postal specialties in shop to greatest extent possible to minimize field assembly.

C. Where dissimilar metals contact each other, protect against galvanic action by painting contact surfaces with bituminous coating or by applying other permanent separation as recommended by manufacturers of dissimilar metals.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mail Receptacles: Install mail receptacles with center of tenant-door lock cylinders and bottom of compartments at the maximum and minimum heights above finished floor established by the USPS and manufacturer's written instructions.

B. Adjust doors to operate correctly.

3.2 FIELD QUALITY CONTROL

A. Arrange for USPS personnel to examine and test postal specialties served by the USPS after they have been installed according to USPS regulations.

END OF SECTION 105500

SECTION 108000 - WIRE CLOSET SHELVING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

A. The extent of the work includes the shelving shown without closets.

1.2 QUALITY ASSURANCE:

A. Submit catalog cuts for all types of shelves required.

B. Submit sample of material for color selection and approval.

C. Field measure all spaces indicated to receive shelving to insure proper fit.

PART 2 - PRODCUTS

2.1 MANUFACTURER

A. Closet Maid
B. Schulte
C. Rubbermaid
D. Architect approved equal

2.2 MATERIAL

A. Ventilated, vinyl or epoxy coated wire shelving.

2.3 LOCATION AND TYPE

A. See Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. In complete accordance with shelving manufacturer recommendations and all necessary components and accessories, support brackets, spacers, etc. Refer to “Mounting Height Schedule” on the drawings for additional information.

END OF SECTION 108000

SECTION 113100 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Refrigerator

1.2 QUALITY ASSURANCE

A. Equipment: Conform to applicable code for UL approval.

B. Refrigerator to be ENERGY STAR rated.

1.3 SUBMITTALS

A. Product Data: Provide data on equipment and accessories.

B. Operating and Maintenance Instructions: Include relevant instructions.

C. Submit manufacturer's installation instructions.

D. Include maintenance information on regular servicing.

PART 2 - PRODUCTS

2.1 All appliances shall be white.

2.2 APPLIANCES

A. Manufacturers:
1. Frigidaire
2. General Electric
3. Kenmore
4. Broan

B. Range: 24" width, 3.0 cu. ft. freestanding electric range, 4 coil elements, chrome removable one piece drip bowls, upfront controls, 2 oven racks, standard oven window, UL Listed, ADA compliant, ANSI certified, manual clean.

1. Hotpoint Model # RA824DDWW, white

C. Range Hood, ducted: 24" width, 190 CFM, 7.5 Sone (3-14" x 10") or 220 CFM (7" round)– HVI Certified, 7" round vertical discharge; 3-1/4" x 10" vertical discharge; 3-1/4" x 10" horizontal discharge, washable aluminum mesh grease filter, rotary, infinitely adjustable fan-speed control, 75-watt cooktop lighting with protective polymeric lens and two-level light control, 3-1/4" x 10" damper/adapter and 7" round adapter, ADA compliant.

1. Broan Model # F402423, 24" Convertible Range Hood, white

D. Refrigerator, Dwelling Units: Free standing type, top-freezer refrigerator frost-free, interior lighting, meat keeper and crisper, 3 adjustable glass shelves, 3 fresh food cabinet drawers:

1. GE Series Energy Star certified,11.6 cu. ft. Top-Freezer Refrigerator Model #GPE12FGKWW ADA Compliant

E. Refrigerator, Community Building: 4.5 cu. ft. capacity, compact/undercabinet free standing refrigerator with 2 Full-Width Glass Shelves, 1 Crisper Drawer, 3 Door Shelves, Beverage Can Dispenser In Door and Freezer: Black. 23” deep, 21-1/4” width, 33-7/8” height

1. Frigidaire Model #FFPE4522QB, Energy Star Certified

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that openings and utility services are ready to receive work and opening dimensions are as indicated on plans.

3.2 INSTALLATION

A. Install equipment in accordance with manufacturer's instructions.

B. Set and adjust sot units are level and plumb.

C. Activate units to confirm correction operation.

D. Turn refrigerators on to moderate temperature setting.

E. Connect to utilities and make units operational.

F. Do not provide water supply and associated connections to refrigerators that have ice making and water dispensing capabilities.

END OF SECTION 113100

SECTION 122113 – HORIZONTAL LOUVRE BLINDS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Horizontal aluminum mini-blinds and operating hardware for installation at all windows, entry door half-lite windows.

1.2 SYSTEM DESCRIPTION:

A. Horizontal aluminum mini-blinds installed at all windows; manual control of raising and lowering by cord for full range; blade angle adjustable by control wand.

1.3 SUBMITTALS:

A. Product Data: Submit product literature and installation instructions.

B. Shop drawings: Indicate field-measured dimensions of opening which are to receive blinds, details on mounting surface and sill conditions, and details of corners and conditions between adjacent blinds.

C. Samples: Submit a sample of each type and color of material specified.

PART 2 - PRODUCTS

2.1 HORIZONTAL ALUMINUM MINI-BLIND:

A. Product:
Acceptable product: 1” aluminum mini-blind as manufactured by Levolor Home Fashions, or approved equal.

B. Head Rail: .025" thick Tomized steel, U-shaped, 3/4" high x 1 3/16" wide. All hardware enclosed in the headrail.

C. Guardian Tilter: **.**031" thick Tomized steel housing with a self-lubricating nylon, automatically disengaging worm and gear mechanism to eliminate overdrive.

D. Tilt Wand: Solid, transparent with a hexagonal cross-section 5/16" across flats.

E. Cord Lock: .031" thick Tomized steel and shall be crashproof.

F. Drums & Cradles: Provided with each ladder. Drums are engineered polymer. Cradles are .025" thick Tomized steel.

G. Installation Brackets: .042" thick Tomized steel with a rivet-hinged safety locking front cover to permit removal of headrail without lateral movements.

H. Ladders (slat supports): Distance between slats does not exceed 21.5 mm (nominally 14.2 slats per vertical foot).

I. Slats: 5000 series magnesium aluminum alloy which includes recycled aluminum material. Slats are nominally 1" wide and the thickness of the slats is nominally .0055" or .0060".

J. Bottom Rail: .031" thick Tomized steel.

2.2 FINISHES

A. Color: As selected by architect and/or owner from manufacturer's standard solid colors.

PART 3 - EXECUTION

3.1 EXAMINATION AND INSPECTION:

A. Window treatment subcontractor shall be responsible for inspection of site, field measurements, and approval of mounting surfaces and installation conditions.

B. Subcontractor shall verify that site is free of conditions that interfere with blind installation and operation, and shall begin installation only when any unsatisfactory conditions have been rectified.

3.2 INSTALLATION:

A. Install blinds at all windows and entry door half-lite windows.

B. Install blinds in accordance with manufacturer's specifications, standards, and procedures.

C. Provide support brackets as per manufacturer's installation instructions.

D. See installation instructions packaged with blinds for more installation details.

E. Provide adequate clearance to permit unencumbered operation of blind and hardware.

F. Demonstrate blinds to be in uniform and smooth working order.

END OF SECTION 122113

SECTION 123530 - RESIDENTIAL CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes wood faced kitchen and vanity cabinets.

B. Related Requirements:

1. Section 123623.13 "Plastic-Laminate-Clad Countertops."

1.2 DEFINITIONS

A. MDF: Medium-density fiberboard.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Cabinets.
2. Cabinet hardware.

B. Shop Drawings: Include plans, elevations, details, and attachments to other work. Show materials, finishes, filler panels, and hardware.

C. Material Samples for initial selection: Manufacturer's color charts showing the full range of colors, textures, and patterns available for each type of material exposed to view.

D. Material Samples for Verification: For the following materials; in sets showing full range of color, texture, and pattern variations expected:

1. Wood-veneered panels with transparent finish, 3 1/4 x 5 3/4 inches (80 x 145mm), for each species.
2. Solid wood with transparent finish, 50 sq. in. (300 sq. cm.), for each species.
3. Plastic laminate for countertops, 8 by 10 inches (200 by 250mm).
4. One unit of each type of exposed hardware.

E. Product Samples for Verification: As Follows:

1. One full-size, finished 15” base cabinet complete with hardware, doors, and drawers, but without countertop.
2. One full sized, finished 15” wall cabinet complete with hardware, doors, and adjustable shelves.
3. Plastic laminate for countertops, 8 by 10 inches (200 by 250mm)

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For casework.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer that is certified for chain of custody by an FSC-accredited certification body.

B. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

PART 2 - PRODUCTS

2.1 CABINETS

A. Manufacturers:
1. Kitchens: Subject to compliance with requirements, provide products by one of the following:
   a. Kitchen Kompact; Mellowood, Maple, Shaker style
   b. Crotone Kitchens, Inc.; Craftwood Collection, Birch, Shaker style
   c. Tru-Wood Cabinets, Inc.; Tru Series, Alvar, Maple, Shaker style
   d. Legacy Cabinets, Inc.; Advantage Series, Avanti, Maple Toast, Shaker Style
   e. Alternate manufacturers will be considered in accordance with provisions of Section 012500.
2. Bathrooms, Dwelling Units, ADA Vanity:
   1. Fairmont Designs
      a. 36” Town & Country ADA Transitional Vanity Set
      b. Model # 172-ADW3621
      c. Solid Poplar, MDF with maple veneer
   2. Alternate manufacturers will be considered in accordance with provisions of Section 012500.

B. Quality Standard: Provide cabinets that comply with KCMA A161.1.

1. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semiexposed location of each unit and showing compliance with the above standard.

2. At minimum use HUD Severe Use cabinetry.

3. Avoid blind corners to maximize space.

2.2 CABINET MATERIALS

A. FACE FRAME
1. Kiln dried solid wood.

2. Mortise and tenon, glued and fastened.
3. Rails 3/4"x1 3/4".
4. Stiles 3/4"x1 3/4".
5. Mullion 3/4"x3 1/2".

B. END PANELS
1. Exposed ends: 1/2" regular hardwood plywood.
2. Ends to be rabbeted to receive tops and bottoms, glued and fastened to face frame.

C. BACKS
1. 1/4" thick regular hardwood plywood.
2. Securely glued and fastened to ends.

D. BASE BOTTOMS
1. 1/2" thick regular hardwood plywood.
2. Bottoms let into end panels and face frame.

E. WALL TOP/BOTTOM
1. 1/2" thick regular hardwood plywood.
2. Top/bottoms let into end panels and face frame, glued and fastened.

F. INSTALLATION CLEATS
1. Wall cabinets to have a solid lumber cleats running full length of cabinet at top and bottom.
2. Base cabinets to have solid lumber cleats at the top and bottom.

G. DOOR AND DRAWER FACES
1. Door model: As selected by Architect and owner from manufacturer's full range for the selected series.
2. Door profile: As selected by Architect and owner from manufacturer's full range for the selected series.

H. FINISH
1. Factory finish, consisting of stain from manufacturer’s standard color selection, sealer and minimum two varnish coats, lightly sanded between coats.

I. SHELVING
1. 3/4" thick regular hardwood plywood with front edge banded.
2. Shelves are let into dadoes of end panels in base cabinets.
3. Shelving is adjustable shelving in wall cabinets.

J. DRAWERS
1. Drawer fronts are same material as doors.
2. Sides, backs and fronts are 3/4" thick solid wood.
3. Sides to be mortised and tennoned into front and back.
4. Drawer bottoms are 1/4" plywood let into sides, front and back components.
5. Drawer fronts shall have a minimum 15˚ reverse bevel shall machined on the top and bottom edges to serve as a finger grip.

K. BASE CABINET TOE KICK
1. 1/2” Plywood minimum, finished to match base cabinet.

L. FACTORY FINISH: Needs to meet or exceed NKCA/ANSI.

2.3 CABINET HARDWARE

A. General: Manufacturer's standard units complying with BHMA A156.9, type, material, size, and finish as selected from manufacturer's standard choices.

B. Hinges:
1. Concealed type: 6-way adjustable, full (FOL) or partial (POL) overlay, fully concealed, self-closing hinges with a 105° opening.
2. Barrel Type: Standard heavy duty semi-concealed, 1/2"overlay, wrap around, self-closing.

C. Drawer Guides: 75 pound rated drawer guide system, side mounted, 3/4 extension with self-adjusting mounting brackets at rear. Drawer slides are fastened to the drawer box with screws.

D. Pulls: Solid brass, wire type with 1" minimum finger clearance, 5/16” diameter, 4” minimum screw hole spacing, 15/16” projection, #4484 as manufactured by Stanley Security Solutions, Inc. or equal. Finish to match passage door hardware. Install pulls at handicap accessible kitchens only.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cabinets with no variations in flushness of adjoining surfaces; use concealed shims. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match cabinet face.

B. Install cabinets without distortion so doors and drawers fit the openings, are aligned, and are uniformly spaced. Complete installation of hardware and accessories as indicated.

C. Install cabinets level and plumb to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m).

D. Fasten cabinets to adjacent units and to backing.

E. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch (38-mm) penetration into wood framing, blocking, or hanging strips.

F. FASTENING CLEATS:

G. Wall: ¾” by 3.5 running full length.

H. Base: ¾” by 7.5” running full length.

I. Bottom: ¾” by 3.5 running full length.

3.2 ADJUSTING AND CLEANING

A. Adjust cabinets and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

END OF SECTION 123530

SECTION 123623 - PLASTIC-LAMINATE-CLAD COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes plastic-laminate countertops.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product, including panel products and high-pressure decorative laminate.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations.

C. Samples:

1. Plastic laminates, for each color, pattern, and surface finish.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products Certified participant in AWI's Quality Certification Program.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install countertops until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE COUNTERTOPS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades indicated for construction, installation, and other requirements.

B. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGP. Minimum thickness 1.0mm.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Formica Corporation.
   b. Wilsonart International; Div. of Premark International, Inc.

C. Chemical-Resistant, High-Pressure Decorative Laminate: NEMA LD 3, Grade HGP, and as follows:

1. Laminate has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.9.5:

   a. Nitric Acid (30 Percent): Moderate effect.
   b. Sulfuric Acid (77 Percent): Moderate effect.
   c. Hydrochloric Acid (37 Percent): Moderate effect.
   d. Phosphoric Acid (75 Percent): No effect.
   e. Acetic Acid (98 Percent): No effect.
   f. Formaldehyde: No effect.
   g. Ethyl Acetate: No effect.
   h. Ethyl Ether: No effect.
   i. Phenol (85 Percent): Moderate effect.
   j. Benzene: No effect.
   k. Xylene: No effect.
   l. Butyl Alcohol: No effect.
   m. Furfural: No effect.
   n. Methyl Ethyl Ketone: No effect.
   o. Sodium Hydroxide (25 Percent): No effect.
   p. Sodium Sulfide (15 Percent): No effect.
   q. Ammonium Hydroxide (28 Percent): No effect.
   r. Zinc Chloride: No effect.
   s. Gentian Violet: No effect.
   t. Methyl Red: No effect.

2. Products: Subject to compliance with requirements, provide one of the following:

   a. Formica Corporation; Lab Grade 840 Black.
   b. Wilsonart International, Div. of Premark International, Inc.; Chemsurf.

D. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   1. As selected by Architect from manufacturer's full range in the following categories:

E. Configurations:
   1. Front Edge: No Drip 1 3/8” high with 3/4” drip edge.
   2. Back Splash: Continuous one piece radiused up wall min. 4”, with 1 1/8” return to wall.
   3. Side Splash: square edge loose, installed between wall and counter, height to match or be slightly higher than back splash.
   4. Laminate of neutral color to be installed from top of back splash to underside of cabinet.

F. Core Material at Sinks: exterior-grade plywood or phenolic resin.

G. Core Thickness: 3/4 inch (19 mm).

1. Build up countertop thickness to 1-1/2 inches (38 mm) at front, back, and ends with additional layers of core material laminated to top.

H. Backer Sheet: Provide BK-20 if unsupported countertop area equals 4 square feet (for ¾" thick substrate).

I. Paper Backing: Provide paper backing on underside of countertop substrate.

J. Finish: Increased abrasion resistant.

K. Requirement: Postform

L. Perimeter of bottom of countertops and sink cut-outs: sealed with varnish.

2.2 ONE PIECE VANITY SINK TOP WITH INTEGRAL SINK

A. Description: bathroom vanity sink top with integral sink, 1" thick deck x 22" deep top and integral backsplash and side splashes, width as shown on drawings. Pre-drilled faucet holes, adhesive and color-match silicone, matte-finish.

B. Color to be selected by Architect and Owner from manufacturer's standard selection of colors.

C. Vanity sink top and integral sink must be compatible with selected vanity cabinet.

2.3 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard unless otherwise indicated.

1. Wood Moisture Content: 8 to 13 percent.
2. Medium-Density Fiberboard: ANSI A208.2 min. 3/4 inches thick.
3. Particle Board: ANSI A208.1 Grade M-2 Exterior Glue. 45-lb density min. ¾ inches thick.
4. Substrate to comply with ASTM D 1037.

2.4 MISCELLANEOUS MATERIALS

A. Adhesives: Do not use adhesives that contain urea formaldehyde.

B. Adhesives: Use adhesives that meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. VOC Limits for Installation Adhesives and Sealants: Use products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.
2. Multipurpose Construction Adhesives: 70 g/L.
3. Structural Wood Member Adhesive: 140 g/L.
4. Architectural Sealants: 250 g/L.

2.5 FABRICATION

A. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch (25 mm) over base cabinets. Ease edges to radius indicated for the following:

1. Solid-Wood (Lumber) Members: 1/16 inch (1.5 mm) unless otherwise indicated.

B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

C. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of openings in countertops with a coat of varnish.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition countertops to average prevailing humidity conditions in installation areas.

3.2 INSTALLATION

A. Grade: Install countertops to comply with same grade as item to be installed.

B. Assemble countertops and complete fabrication at Project site to the extent that it was not completed in the shop.

1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items.
2. Seal edges of cutouts by saturating with varnish.

C. Field Jointing: Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required.

1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.

D. Install countertops level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

E. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

F. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

1. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
2. Seal junctures of tops, splashes, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

END OF SECTION 123623

22000
PLUMBING

PART I -- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

B. Bidders shall utilize a complete set of Bidding Documents in preparing of Bid including Drawings and Specifications. The Engineer assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 DEFINITIONS

A. As used in the drawings and specifications for plumbing work, certain non-technical words shall be understood to have specific meanings as follows, regardless of indications to the contrary in the General Conditions of other documents governing the plumbing work.

B. As used in this section, “provide” means “furnish and install”, and “POS” means “Provided under Other Sections”.

C. "Approved Equal" means any equipment or material, which is approved by the engineer, and equal in quality, durability, appearance, strength, design and performance to the equipment or material originally specified.

D. "Alternate" means an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

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

E. "Concealed" means hidden in chases, furred spaces, walls, above ceilings or enclosed in construction.

F. "Contractor and/or Subcontractor" specifically means, the Plumbing Subcontractor working under this Section of the Specification.

G. "Exposed" means visible, in sight, or not installed "concealed" as defined above.

H. “Furnish” or “Provide” means:

1. Purchase and deliver to the project site complete with every necessary appurtenance and support, all as part of the plumbing work. Purchasing shall include payment of all sales

taxes and other surcharges as may be required to assure that purchased item(s) are free of all liens, claims, or encumbrances.

2. To supply, erect, install and connect in complete readiness for operation, the particular work referred to, unless otherwise specified.

I. “Install” means: Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project, all as part of the plumbing work.

J. "May" means: A permissive term.

K. “New” means: Manufactured within the past two (2) years and never before used.

L. "Piping" means all piping including fittings, joints, hangers, supports and valves.

M. “Provide” means: “Furnish” and “Install”.

N. "Shall" means: A mandatory term.

O. "Underground or Below Slab" means piping that is buried exterior to or within the building.

P. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any plumbing item in the drawings or specifications for plumbing work carries with it the instruction to furnish, install and connect the item as part of the plumbing work, regardless of whether or not this instruction is explicitly stated.

Q. It shall be understood that the specifications and drawings for plumbing work are complimentary and are to be taken together for a complete interpretation of the plumbing work except that indications on the drawings, which refer to an individual element of work, take precedence over the specifications where they conflict with same.

1.3 SUMMARY

A. This section addresses materials and methods common to more than one Subcontractor. Refer to the drawings to determine the extent of work required of each individual trade.

1.4 DESCRIPTION OF WORK

A. The work described herein shall be interpreted as work to be done by the Plumbing Subcontractor. Work to be performed by other trades will be specifically referenced to a particular Contractor or Subcontractor.

B. The work under this section shall consist of furnishing all labor, materials, equipment, supervision, transportation, construction, facilities, devices and incidentals necessary to provide complete plumbing systems as hereinafter described and as indicated on the drawings, including, but not limited to the following:

1. Domestic cold water system.

2. Domestic hot water system.

3. Sanitary, waste and vent system.

4. Radon vent system.

5. Coordination drawings.

6. As of January 4, 2014; all products associated with any plumbing system utilized to convey potable drinking water shall comply with the Reduction of Lead in Drinking Water Act.

1.5 RELATED WORK IN OTHER SECTIONS

A. The following work is not included as work in this Section and is to be performed under other Sections:

1. Heating, Ventilating and Air Conditioning

2. Foundations and Trenching

3. Electrical

4. Utilities Beyond 5'-0" from the Building

5. Excavation and Backfilling

6. Temporary Light and Power

7. Temporary Water, Heat, Fire Protection and Toilet Facilities

8. Flashing and Caulking

9. All Cutting and Patching

10. Painting

11. Toilet Room Accessories

12. Design of radon vent system.

1.6 CODES, ORDINANCES AND PERMITS

A. All materials and workmanship shall comply with the latest editions of all applicable Codes, Local and State Ordinances, Industry Standards and Regulations.

B. Where the contract documents indicate more stringent requirements than the following codes and ordinances, the contract documents shall take precedence.

C. In the event of a conflict with Codes, the most stringent requirements shall apply.

D. The Plumbing Subcontractor shall notify the Architect/Engineer of any discrepancies between the Contract Documents and applicable Codes, Standards, etc.

E. File all documents, pay all fees and secure all permits, inspections and approvals necessary for the work of this section.

F. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings, in addition to contract drawings and documents in order to comply with all applicable local ordinances and regulations, whether or not shown on drawings and/or specified.

G. The following Codes, Standards and References shall be utilized as applicable:

1. 2012 International Building Code including Rhode Island State Building Code Regulation SBC-1-2013.
2. 2013 Rhode Island Fire Safety Code
3. 2012 International Plumbing Code including Rhode Island State Plumbing Code Regulation SBC-3-2013.
4. 2012 International Energy Conservation Code
5. American National Standard Accessible and Usable Buildings and Facilities ICC/ANSI A117.1-2009
6. Local Codes, Ordinances, Board of Health requirements and Regulations.
7. American National Standards Institute (ANSI).
8. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE).
9. American Society of Mechanical Engineers (ASME).
10. American Society of Testing Materials (ASTM).
11. American Welding Society (AWS).
12. Cast Iron Soil Pipe Institute (CISPI)
13. Commercial Standards, U.S. Department of Commerce (CS).
14. Department of Environmental Protection (DEP).
15. Environmental Protection Agency (EPA).
16. Factory Mutual (FM).
17. Industrial Risk Insurers (IRI).
18. Insurance Services Organization (ISO).
19. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS).
20. National Electric Code (NEC).
21. National Electrical Manufacturers Association (NEMA).
22. National Fire Protection Association (NFPA).
23. Occupational Safety and Health Administration (OSHA)
24. Owner's Insurance Company Requirements.
25. State Department of Public Safety.
26. Underwriters' Laboratories, Inc. (UL).

1.7 CONTRACT DRAWINGS AND SPECIFICATIONS

A. The Contract Drawings are generally diagrammatic and convey the Scope of Work and General Arrangement of apparatus and equipment. The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Architect and Engineer before being installed. The Subcontractor shall follow drawings in laying out work and shall check drawings of the other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. If directed by the General Contractor, Engineer and/or Architect, the Subcontractor shall, without extra charge, make reasonable

modifications in the layout as needed to prevent conflict with work of other trades or before proper execution of the work.

B. Specifications: The specifications are intended only to complement the drawings; however, work detailed and/or noted only on the drawings or work described only in the specifications shall all be considered as part of the scope of work.

1.8 OBTAINING INFORMATION

A. Obtain from the manufacturer the proper method of installation and connection of the equipment that is to be furnished and installed. Obtain all information that is necessary to facilitate the work and to complete the project.

1.9 COOPERATION AND COORDINATION WITH OTHER TRADES

A. The Contract Drawings are diagrammatic only intending to indicate general routing and location of piping and equipment. The Drawings are not intended to show every offset and accessory required, nor every structural difficulty that may be encountered.

B. Where requirements of the applicable codes, plans and/or specifications are in conflict, the most stringent requirement will be included in the Contract. Prior to ordering and/or installing any portion of the work which appears to be in conflict, the work shall be brought to the Architect/Engineer's attention for direction as to what is provided.

C. Final location of plumbing fixtures and other pieces of equipment, whether or not furnished by the Plumbing Subcontractor, requiring plumbing services shall be coordinated with the Architectural Plans. Additional offsets, fittings, etc., shall be provided as needed to meet this requirement at no extra cost to the Owner.

D. If discrepancies exist in the scope of work as to what trade provides items, they shall be reported to the Architect/Engineer prior to signing the Contract. If the discrepancies are not reported, the Plumbing Subcontractor shall furnish such items as needed for a complete and operable system.

E. All work shall be installed in cooperation with other trades.

F. Keep fully informed as to the shape, size and position of all openings required for all apparatus and give information in advance to build openings into the work. Furnish and set in place all sleeves, pockets, supports and incidentals.

G. All distribution systems which require pitch or slope such as plumbing drains, steam and condensate piping shall have the right of way over those which do not. Confer with other trades as to the location of pipes, ducts, lights and apparatus and install work to avoid interferences.

H. Prepare and submit for review, coordinated Plans and sections, clearly showing how the work is to be installed in relation to the work of other trades. Work that is installed before coordination with other trades, or that causes interference with the work of other trades shall be changed to correct condition.

I. The Plumbing Contractor shall pay for all permits, inspections, labor, material and fees associated with the various Utility Companies coordination requirements mentioned in this section and for this Contractor's work under this project.

J. HVAC, Plumbing, Fire Protection, and Electrical Drawings are diagrammatic. They indicate general arrangements of mechanical and electrical systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with structural and other trades and to meet Architectural requirements.

K. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Architect. Where the plumbing work shall interfere with the work of other trades, assist in working out the space conditions to make satisfactory adjustments before installation. Without extra cost to the Owners, make reasonable modifications to the work as required by normal structural interferences. Pay the General Contractor for additional openings, or relocating and/or enlarging existing openings through concrete floors, walls, beams and roof required for any work which was not properly coordinated. Maintain maximum headroom at all locations. All piping, duct, conduit, and associated components to be as tight to underside of structure as possible.

L. If any plumbing work has been installed before coordination with other trades so as to cause interference with the work of such trades, all necessary adjustments and corrections shall be made by the trades involved without extra cost to the Owners.

M. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Architect and Engineer for review and approval.

1.10 UTILITY COMPANY COORDINATION

A. This section includes, but is not limited to coordination with the following utilities, agencies and authorities having jurisdiction:

1. Plumbing Inspector: Review plans and specifications with the local plumbing inspector. Obtain and pay for all permits.

2. Building Inspector: Review plans and specifications with the local building inspector, if not done so by the General Contractor.

3. OSHA Representative: Review plans and specifications with the local OSHA representative, if not done so by the General Contractor.

4. Dig Safe: This contractor shall notify and coordinate with Dig Safe prior to any excavation; digging; trenching; grading; tunneling; augering; boring; drilling; pile driving; plowing-in or pulling-in pipe or other sub-structure; backfilling; demolition; and blasting related to this Contractor.

1.11 BIDDER'S REPRESENTATION

A. By the act of submitting a bid for the proposed contract, the Bidder represents that:

1. The Bidder and all subcontractors have carefully and thoroughly reviewed the drawings, specifications and other construction contract documents and have found them complete and free from ambiguities and sufficient for the purpose intended; further that.

2. The Bidder intends to use are licensed, skilled and experienced in the type of construction represented by the construction contract documents bid upon; further that.

3. Neither the Bidder nor any of the Bidder's employees, agents, intended suppliers or subcontractors have relied upon any verbal representations, allegedly authorized or unauthorized from the Owner, or the Owner's employees or agents including architects, engineers or consultants, in assembling the bid figure; and further that

4. The bid figure is based solely upon the construction contract documents and properly issued written addenda and not upon any other written representation.

1.12 SHOP DRAWINGS

A. Within thirty (30) days after the date of notice to proceed, and before purchasing any materials or equipment, submit for approval a complete itemized list, in six (6) copies, of all materials, equipment and of Subcontractors to be incorporated under this Section.

B. After approval of the list, submit for review a minimum of eight (8) sets of detailed shop drawings. All shop drawings for equipment submitted for review shall include complete Specifications, including type of materials, operating pressures and temperatures, capacities, performance and power requirements to determine compliance with Contract Documents. All data submitted shall be complete for all equipment and shall apply only to this specific project.

C. All shop drawing submittals shall be complete and include all Part 2 – Products of this specification and be clearly identified. No consideration will be given to partial submittals, except with prior approval.

D. Facsimiles of any type will not be accepted.

E. A written letter from the Plumbing Contractor stating all piping systems above and below ground specified herein have been tested, flushed and approved by the Local Plumbing Inspector.

F. A written letter from the Plumbing Contractor stating all water piping systems above and below ground specified herein have been sterilized, flushed and approved by the Local Plumbing Inspector.

G. Provide test certificates, registration forms, diagrams, plans, details, permits, etc. for all backflow devices, as specified herein with a written cover letter from a certified backflow protection device tester stating that all testable backflow devices have been tested.

H. A written cover letter, attached to the insulation materials submittals, from the Insulation Contractor stating an outline for all insulating materials furnished and installed for all piping systems specified herein.

I. If foreign materials are used, Engineer shall be informed in writing together with any information about them he requires for approval.

J. Engineering Design Service's reserves the right to request additional submittals on any item not specified herein under this section.

K. The approval of the equipment does not relieve the Subcontractor of responsibility of shop drawing errors related to details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the Specifications, and/or job conditions as they exist.

L. Refer to General Requirements for the substitutions of equipment and submittal of shop drawings. If apparatus or materials are substituted for those specified, and such substitution necessitates changes in, or additional connections, piping, supports, or construction, same shall be provided. Plumbing Subcontractor to assume cost and entire responsibility thereof.

M. Regardless of any information included in the shop drawing submitted for review, the requirements of the Drawings and Specifications shall not be superseded in any way by the shop drawing review.

N. Each submittal shall be reviewed, stamped and certified prior to submission to the Architect. Such certification shall be made by the Owner, or Corporate Officer of the Contractor, or by a person duly authorized by the Owner to sign binding agreements for the Contractor. The certification shall state that data and details contained on each shop drawing, layout drawing, catalog data and brochure has been reviewed by the Contractor and that it complies with the Contract Documents in all respects. Shop drawings, layout drawings, catalog data and brochures will not be reviewed and will be returned to the Contractor unchecked unless they are certified.

O. It is intended that the Contractor submit complete and accurate data at the first submission. If the shop drawing is returned marked “Does not Conform”, or “Resubmit For Final Review”, only one (1) additional submission will be permitted.

P. Equipment shall be of proper size for its allotted space. Equipment shall be disassembled as required, without invalidating the manufacturer’s warranty, so that it can be installed through regular window, door and/or louver openings.

Q. The shop drawings and manufacturer’s data shall be submitted in a timely manner sufficiently in advance to give ample time for checking, correcting, resubmitting and rechecking if necessary. No claim for delay will be granted for failure to comply with this requirement.

R. A minimum period of two (2) weeks, exclusive of transmittal time, will be required in the Engineer’s office each time shop drawings, layout drawings and catalog data and brochures are submitted or resubmitted for review. This time period shall be considered by the Contractor when scheduling his work.

1.13 EXCAVATION AND BACKFILL

A. Pipe bedding shall be in accordance with provisions of sections on excavation and backfill. Work under this section shall commence only after proper bedding material has been provided, graded and properly compacted. Excavation shall be kept open until system has been inspected, tested and approved.

B. The Plumbing Contractor shall observe all excavation, backfilling and compaction of all underground piping associated with work under this section.

1.14 RECORD DRAWINGS

A. All costs related to the following requirements shall be paid for by this Subcontractor.

B. Purchase and maintain at the job site a complete and separate black line set of prints of the Contract Drawings on which accurately indicate daily progress by coloring materials and apparatus as installed. Schedules shall be modified to reflect data consistent with that of the installed equipment. Clearly show all changes to the work as a result of change orders, instructions issued by the Architect or conditions encountered in the field. Accurately indicate the location, size, type and elevation of new utilities and their relationship to existing utilities.

C. The marked up and colored in prints will be used as a guide for determining the progress of the work installed. They shall be inspected weekly and shall be corrected immediately if found inaccurate or incomplete. Requisitions for payment will not be approved until the Drawings are accurate and up-to-date.

D. At the completion of the work, submit one (1) set of marked up prints for review and comment. After review and comment, these marked up prints shall be used in the preparation of the Record Drawings. The Record Drawings shall consist of these prints (corrected) previously indicated, as well as two (2) CAD disks of the Final Coordination Drawings, corrected on the basis of the Architect/Engineer's final comments.

E. Obtain and pay for one (1) set of reproducible mylars and CAD disks (AutoCAD Release 2000 minimum or compatible system) applicable to this Section. Make all modifications to these reproducibles as shown on the marked up prints. Remove all superseded data to show the completed installation.

F. The Record Drawings may be made from the originals of the Contract Drawings. Arrange with the Architect to have these reproducibles made from the originals.

G. Deliver the completed reproducible Record Drawings and CAD disks properly titled and dated to the Architect. These Record Drawings shall become the property of the Owner.

1.15 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. Operating Instructions: Provide operating instructions to the Owner's designated representative with respect to the operation functions and maintenance procedures for all equipment and systems installed. The cost of such instructions, up to one full day of the Contractor's time, shall be included in the contract price. The cost of providing a manufacturer's representative at the site for instructional purposes shall be included in the Contract Price. Included shall be a letter with two (2) copies containing the name of the person or persons to whom the instructions were given and the dates of the instruction period shall be submitted to the Architect at the completion of the project.

B. Maintenance Manuals: At the completion of the project, turn over to the General Contractor four (4) complete manuals in 3-ring binders containing only that information which specifically applies to this project and all unrelated material shall be deleted, indexed, containing the following:

1. Complete shop drawings of all material and equipment in Part 2 of this section.
2. Operation descriptions of all systems.

3. Provide name, address and telephone number of the manufacturer's representative and service company for each piece of equipment so that the source of replacement parts and service for each item of equipment can be readily obtainable.
4. Preventative maintenance instructions for all systems.
5. Spare parts list of all system components.
6. Copies of all valve charts.
7. During the instruction period this manual shall be used and explained.

1.16 GUARANTEE

A. This Contractor shall obtain in the General Contractor's and Owner's name, the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents. The guarantee shall be for a period of one (1) year minimum from the date of acceptance or final payment.

B. Any failure due to defective material, equipment or workmanship which may develop shall be corrected at no expense to the Owner, including all damage to areas, materials and other systems resulting from such failures.

C. Upon receipt of notice from the Owner of failure of any part of the systems during the guarantee period, the affected parts shall be replaced. Any equipment requiring excessive service shall be considered defective and shall be replaced.

1.17 STORAGE OF MATERIALS

A. Store materials prior to their installation where designated by the General Contractor. This Contractor shall be responsible for all materials stored and protect all installed equipment from injury or defacement.

1.18 PROTECTION OF WORK AND PROPERTY

A. Be responsible for the care and protection of all work included under this Section until it has been tested and accepted.

B. Protect all equipment and materials from damage from all causes including theft. All materials and equipment damaged or stolen shall be repaired or replaced with equal material or equipment.

C. Protect all equipment, outlets and openings with temporary plugs, caps and covers. Protect work and materials of other trades from damage that might be caused by work or workmen and make good damage thus caused.

D. When open flame or spark producing tools such as blow torches, welding equipment, etc., are required in the process of executing the work, the General Contractor will be notified not less than twenty-four (24) hours in advance of the time that the work is to begin and the location where the work is to be performed. Provide, where necessary, fire protective covering and maintain a constant non-working fire watch where work is being performed and until it is completed.

1.19 COOPERATION WITH OTHER TRADES

A. Give full cooperation to other trades and furnish in writing to the Architect any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

B. Coordination drawings shall be initiated under Section 15500 of the Specifications. It is their responsibility for preparation of project coordination drawings showing the installation of all equipment, piping, ducts and accessories to be provided under Section 15500 of the Specifications. These drawings shall be prepared at not less than 3/8 in. = 1 ft. scale, and shall show building room layouts, structural elements, ductwork and lighting layouts of function. A reproducible copy of each drawing prepared shall then be submitted to each Contractor working under Sections 15300, 15400 and 16000, who shall be responsible to coordinate his equipment and systems and shall show these on the drawings submitted. After this Contractor has fulfilled his obligation, he shall return the drawings to the HVAC Contractor. After each drawing has been coordinated between trades, each trade shall sign each drawing, indicating acceptance of the installation. The HVAC Contractor shall then print the coordination original and these prints submitted through the General Contractor to the architect for review and comment, similar to shop drawings. Comments made on these drawings shall result in a correction and re-submittal of the drawings.

C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

D. The Coordination Drawings shall be produced on AutoCAD Release 2006 minimum or compatible system. A disc and one (1) set of reproducible sepias (all-trade composite) shall be provided to the Architect/Engineer for review.

E. The cost of preparing and reproducing these Drawings will be included as part of this Contract.

F. Coordination Drawings shall not be construed as replacing any Shop Drawings.

G. The Plumbing Subcontractor shall be additionally responsible for preparing drawings indicating all the buried or underground plumbing systems. Include in these documents all other underground components such as, but not limited to, underslab drainage systems, foundation drainage systems, footings, foundation walls, pits, tie beams, electric and telephone duct banks.

1.20 CONTINUITY OF SERVICE AND SCHEDULING OF WORK

A. Continuity of all services shall be maintained in all areas which will be occupied during the construction period. When an interruption of service becomes necessary, such shall be made only upon consent of the Owner and at a time outside normal working hours as he shall designate.

B. Refer to the overall scheduling of the work of the project. Schedule work to conform to this schedule and install work to not delay nor interfere with the progress of the project.

1.21 SUBSTANTIAL COMPLETION

A. When Subcontractor considers Work under this Section (or designated portion of Work) is

substantially complete, submit written notice through the General Contractor with a list of items remaining to be completed or corrected.

B. Should Architect and/or his Engineer observe and find Work is not substantially complete, he will promptly notify Subcontractor through the General Contractor in writing, listing observed deficiencies.

C. Subcontractor shall remedy deficiencies and send a second written notice of substantial completion.

D. When Architect and/or his Engineer finds work is substantially complete he will prepare a Certificate of Substantial Completion in accordance with provisions of General Conditions.

1.22 FINAL COMPLETION

A. When Subcontractor considers Work under this Section is complete, submit through the General Contractor 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 and deficiencies listed with Certificate of Substantial Completion have been corrected.
4. Equipment and systems have been tested, adjusted and balanced and are fully operational.
5. Operation of systems has been demonstrated to Owner's personnel.
6. Work is complete and ready for Architect's and/or his Engineer's final review.
7. Should Architect and/or his Engineer observe and find work incomplete, he will promptly suspend his review and notify Subcontractor in writing through the General Contractor.
8. Subcontractor shall complete his work, remedy deficiencies and send a second certification of final completion.
9. Architect and/or his Engineer shall, upon receipt of a second certification of completion, make a second review and shall notify the Subcontractor in writing through the General Contractor listing observed deficiencies.
10. When Architect and/or his Engineer finds work complete, he will consider close out submittals.

1.23 REOBSERVATION

A. Should status of completion of Work require additional services by Architect and/or his Engineer due to failure of Work to conform with Subcontractor's claims on initial Architect and/or Engineer's review for Substantial Completion or for Final Completion, Owner will deduct the amount of Architect and/or his Engineer's compensation for additional services from final payment to Subcontractor.

1.24 CERTIFICATES OF APPROVAL

A. Upon completion of all work, furnish in duplicate certificates of inspections from all inspectors and authorities having jurisdiction, notarized letters from the manufacturers stating that authorized factory engineers have inspected and tested the operation of their respective equipment and found same to be in satisfactory operating condition.

1.25 INSPECTION AND TEST

A. If inspection of materials and/or equipment installed shows defects, such defective materials and/or equipment shall be replaced at no cost to the General Contractor or Owner, and the inspection and tests repeated.

B. Make all reasonable tests as required, and prove the integrity of all work and leave the entire installation in correct adjustment and ready to operate.

1.26 MATERIALS AND EQUIPMENT STANDARDS

A. Where materials or equipment are specified by patent proprietary name or name of the manufacturer, such specification shall be deemed to be used for the purpose of establishing a standard for that particular item. No equipment or material shall be used unless previously approved by the Architect.

B. Substitutions may be offered for review provided the material, equipment or process offered for consideration is equal in every respect to that indicated or specified and only if the term "approved equal" appears. The request for each substitution must be accompanied by complete specifications together with drawings or samples to properly appraise the materials, equipment or process.

C. If a substitution of materials or equipment in whole or in part is made, the Contractor shall bear the cost of any changes necessitated by any other trade as a result of said substitution.

D. Manufacturer's directions shall be followed in the delivery, storage and installation of any equipment. Notify the Architect/Engineer, in writing, of any conflict between the Contract Drawings and the manufacturer's requirements and obtain a written response prior to proceeding with work. Should the Subcontractor fail to comply with this, he/she shall bear the costs of any corrections which may be required.

E. The Subcontractor shall furnish and install all equipment, accessories, connections and incidentals to complete the work under this Section.

F. As of January 4, 2014; all products installed associated with any plumbing system utilized to convey potable drinking water shall comply with the Reduction of Lead in Drinking Water Act.

1.27 CONFLICT BETWEEN PLANS AND SPECIFICATIONS

A. In case of conflict between the contract drawings and specifications, the Engineer shall determine which takes precedence.

PART 2 -- PRODUCTS

2.1 PIPE AND FITTINGS

A. Pipe and fittings shall be of US manufacture and shall conform to the latest ANSI, ASTM, AWWA and NFPA Standards including latest amendments.

B. Each length of pipe, each pipe fitting, trap, material and/or device used in the respective system shall have cast, stamped or indelibly marked on it, the maker's name or mark, weight

and quality of the product when such marking is required by the approved standard that applies.

C. Type A:
Exterior water service ????

D. Type B:
Charlotte Pipe FlowGuard Gold CTS CPVC Pipe and Fittng System
Copper Tube Size (CTS) CPVC manufactured to standard dimensional ratio (SDR) 11 pressure pipe and fittings joined by one step solvent cement.
All pipe and fittings shall be supplied as a system by a single manufacturer.
Installation to be in accordance with manufacturer's instructions.

E. Type C:
Type L hard drawn copper tubing with wrought copper sweat fittings joined with approved 95/5 lead free tin antimony solder.
Or
Type L hard drawn copper tubing joined with press fittings including a factory installed sealing element made of EPDM (Black), 420 stainless steel grip ring, separator ring, and an un-pressed fitting leak identification feature.
Installation must be in accordance to manufacturer's instructions and specifications. Contractor shall be trained on the use and installation of the system by manufacturer's representative.

F. Type D:
Pipe shall be manufactured from virgin rigid PVC (polyvinyl chrloride) vinyl compounds with a cell class of 12454 as identified in ASTM D 1784. PVC Schedule 40 pipe shall be Iron Pipe Size (IPS) conforming to ASTM D 1785 and ASTM D 2665. Injection molded PVC DWV fittings shall conform to ASTM D 2665. Fabricated PVC DWV fittings shall conform to ASTM F 1866. All pipe and fittings shall be manufactured in the United States. Pipe and fittings shall conform to NSF International Standard 14.

Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all applicable plumbing, fire, and building code requirements. Buried pipe shall be installed in accordance with ASTM D 2321 and ASTM F 1668. Solvent cement joints shall be made in a two-step process with primer conforming to ASTM F 656 and solvent cement conforming to ASTM D 2564. The system shall be protected from chemical agents, fire-stopping materials, thread sealant, plasticized-vinyl products or other aggressive chemical agents not compatible with PVC compounds.

The system shall be hydrostatically tested after installation.
WARNING! Never test with or transport/store compressed air or gas in PVC pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

This system is intended for use in non-pressure applications where the operating temperature will not exceed 140° F.

PVC cellular core pipe and PVC drainage fittings joined by solvent welding will not be approved as an equal.

G. Joints between different piping materials shall be made with a mechanical joint or dielectric fitting.

H. Pipe and fittings shall be in accordance with the following:

1. Exterior Water Service	Type A
2. Cold Water	Type B
3. Hot Water	Type B
4. Water Heater Inlet and Outlet (Minimum 24 inches)	Type C
5. Water Heater Relief Valve Discharge	Type C
6. Water Heater Safe Pan Discharge	Type C
7. Sanitary, Waste and Vent Inside Buried	Type D
8. Sanitary, Waste and Vent Within the Building	Type D
9. Waste and Vent 1 1/2 inches and Smaller	Type D
10. Sanitary from Last Building Cleanout to 5'-0" beyond Foundation Wall	Type D
11. Radon	Type D

2.2 WATER METER

A. Furnish and install one (1) domestic water meter at the entrance of the domestic water service into Building and additional meters as dictated in this article in accordance with the following:

1. Meter shall be approved equal with one-piece bronze case, bronze measuring chamber and ASME flanges to match incoming line size.
2. Meter shall conform with all rules and regulations of all Authorities having jurisdiction and shall comply with the latest Standards of American and New England Water Works Association, obtain approval and installation requirements of the Local Water Department prior to ordering or installation of meters.
3. The meter shall be the remote reading type and shall conform with all rules and regulations of all Authorities having jurisdiction. Obtain approval of the Local Water Department prior to ordering or installation of remote read device. Remote read device shall be mounted in an acceptable location as determined by the Local Water Department.
4. Each bidder for work under this Section of the Specification shall include in his base bid all cost involved in furnishing and installing meter. Shut-off valves shall be installed on both sides of the meter.

B. Master building meter shall be sized for a maximum probable flow 8 GPM.
Meter shall be equal to Badger Model 70-AMR 1 inch disc meter with integral strainer and automatic meter reading system.

2.3 VALVES

A. Shut-off valves on cold water piping shall be Apollo 70LF-200, solder end, bronze body ball valve, chrome plated bronze ball, 600 psi WOG.

B. Check valves on cold water piping, hot water piping, hot water recirculation, non-potable cold water piping, non-potable hot water piping and non-potable hot water recirculation piping 3 inches and less shall be Nibco Figure No. S-413-W, solder end, bronze body swing check, bronze disc, 200 psi WOG.

C. Drain valves shall be Apollo Valve with cap and chain. All drain valves shall be provided with a Watts No. 8A hose connection vacuum breaker

DV-A: Shall be Apollo 70LF-103HC 1/2 inch supply with 3/4 inch threaded connection.

D. All ball valves for installation in insulated piping shall have valve extensions to suit installation thickness.

E. Backflow preventers 2 inches and smaller shall be reduced pressure principle, all bronze Watts Series LF909-QT-U-S including bronze strainer, valves, air gap fittings test cocks and spare parts kit. Each backflow preventer and shut-off valves shall be installed between 3 and 4 feet above the floor and a minimum of 12 inches from any wall. Support the assembly from the floor or the wall. Run vent to nearest floor drain or similar open receptor. Pressure gauges shall be installed on the supply and discharge side of each backflow preventer assembly. Each pressure gauge assembly shall include TRERICE 600-C gauge, 3-1/2 inch diameter size, 0-160 psi dial range, 735-2 valve and 872-1 snubber. Furnish to the Owner one Watts TK-99 E Test Kit. This Contractor shall act as the Owner's agent in seeking approval from the Department of Environmental Protection or its designee. This Contractor shall submit all plans, specifications and applications required for approval and shall pay all fees. Approvals shall be secured prior to the purchase and installation of backflow preventers. Test and certify backflow preventer.

2.4 BACKWATER VALVES

A. Backwater valves shall be as manufactured by Josam Manufacturing Company, Jay R. Smith Manufacturing Company, Zurn Industries, Inc. or approved equal.

1. Backwater valve shall be Rectroseal Clean Check 4" PVC extendable vertical backwater valve with all appurtenant equipment for a complete installation.

2.5 INSULATION

A. Thermal insulation materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use:

1. American Society for Testing of Materials Specifications:

a. ASTM C 547, "Standard Specification for Mineral Fiber Pipe Insulation"
b. ASTM C 585, "Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System)"
c. ASTM C 1136, "Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation"

B. System Performance

1. Insulation materials furnished should meet the minimum thickness requirements of National Voluntary Consensus Standard 90.1 (1999), "Energy Efficient Design of New Buildings," of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE). However, if other factors such as condensation control or personnel protection are to be considered, the selection of the thickness of insulation should satisfy the controlling factor.

2. Insulation materials furnished and installed hereunder shall meet the fire hazard requirements of applicable building codes when tested in composite form per one of the following nominally equivalent test methods:

a. American Society for Testing of Materials	ASTM E 84
b. Underwriters' Laboratories, Inc.	UL 723 CAN/ULC-S102-M88
c. National Fire Protection Association	NFPA 255

C. Pipe Insulation

1. Molded pipe insulation shall be manufactured to meet ASTM C 585 for sizes required in the particular system.

   Molded fibrous glass pipe insulation shall comply with the requirements of ASTM C 547. One of the following types shall be used:

   a. For indoor systems operating at temperatures from 0° F to +850° F shall be Owens Corning Fiberglas Pipe Insulation with factory applied all-service jacket (ASJ) and two-component adhesive closure system, rated for a maximum service temperature of 850F (454C). 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 +150° F. Manufacturer's data regarding thickness constraints in relation to operating temperature shall be followed.

   b. When multiple layers are required, all inner layer(s) shall be No Wrap.

   c. On cold systems, vapor barrier performance is extremely important. All penetrations of the ASJ and exposed ends of insulation shall 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.

2. Fittings and valves shall be insulated with pre-formed fiberglass fittings or fabricated sections of Owens Corning Fiberglas Pipe Insulation. 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 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 shall be sealed with caulking to allow free movement of the stem but provide a seal against moisture incursion.

3. All piping shall be supported in such a manner that neither the insulation nor the vapor/weather barrier is compromised by the hanger or the effects of the hanger. In all cases, hanger spacing shall be such that the circumferential joint may be made outside the hanger. On cold systems, vapor barrier shall be continuous, including material covered by the hanger saddle.

   a. Piping systems 3" in diameter or less, insulated with Owens Corning insulation, may be supported by placing saddles of the proper length and spacing under the insulation as designated in Owens Corning Pub. 1-IN-14210.

   b. Piping systems 4” in diameter and larger, operating at temperatures less than +200F (93C) 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 (93C), high temperature pipe insulation shall be used for high density inserts.

   c. 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.

   d. 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.

   e. On vertical runs, insulation support rings shall be used as indicated on contract drawings.

4. Accessory materials installed as part of insulation work under his section shall include (but not be limited to):

   a. Closure Materials - Butt strips, bands, wires, staples, mastics, adhesives; pressure-sensitive tapes

   b. Field-applied jacketing materials - Sheet metal, plastic, canvas, fiber glass cloth, insulating cement, PVC fitting covers

   c. Support Materials - Hanger straps, hanger rods, saddles, support rings

D. Insulation shall be in accordance with the following schedule:

System	Insulation Thickness
Cold Water	1/2”
Hot Water	1”

2.6 HANGERS AND SUPPORT

A. Pipe hangers, pipe anchors, auxiliary steel, wood blocking and fixture supports shall be furnished and set by this Contractor, and he shall be responsible for their proper and permanent location. This Contractor shall be responsible for all core drilling.

B. All piping shall be rigidly supported from the building structure by means of approved hangers and supports. The hanging and support of all piping system shall conform to the ANSI/MSS-SP.58 AND MSS-SP 69 latest edition. This Contractor shall furnish and install all required auxiliary steel required for hanging of piping.

C. All horizontal piping shall be hung with approved adjustable malleable iron pipe hangers.

1. Copper tubing 1-1/2 inch and larger shall be supported at ten (10) foot intervals. Copper tubing 1-1/4 inch and smaller shall be supported at six (6) foot intervals.

2. Plastic piping shall be supported at 3 foot intervals for 1-1/4 inch piping and at 4 foot intervals for 1 1/2 inch piping and larger.

D. Vertical hangers

1. Copper tubing shall be supported at each story height and at not more than ten (10) foot intervals.

2. Plastic piping shall be supported at each floor.

E. Interior hangers for piping sizes four (4) inches and smaller shall be Carpenter & Paterson, No. 1A band type, Grinnell Company, Calco Steel Products Company or equal, black steel with hanger rods with machine threads. Hangers for piping larger than four (4) inches shall be the adjustable clevis hanger type, malleable iron with extension rod. Chain, strap, perforated bar or wire hangers will not be approved. Where used for uninsulated copper tubing, all hangers shall be copper plated and chrome plated for chrome plated piping. Insulation shields shall be provided on all horizontal insulated piping at each hanger or support location. Insulation shields shall be galvanized steel, 180 degrees arc and centered on the hanger or support. On diameters 4 inches and smaller, shield shall be 12-inch long, 18 gauge steel. On diameters 5 inches and 6 inches, shield shall be 18-inch long, 16 gauge steel. On diameters 8 inches and 10 inches, shield shall be 24-inch long, 14 gauge steel. On diameters greater than 10 inches, shield shall be 24-inch long, 12 gauge steel. Structure attachments shall be as manufactured by Carpenter & Patterson and shall be suitable to carry the weight.

Approved gang hangers may be used in lieu of separate hangers on pipes running parallel to each other and close together.

F. All fixtures and equipment shall be supported and fastened in a satisfactory manner and in accordance with fixture manufacturer's recommendations.

G. Where chair carriers are required, they shall be completely concealed in the building construction and shall rigidly support the fixture from the floor. Chair carrier shall support fixtures in such a manner that no part of the fixture will be supported by the wall or partition. Chair carriers shall be furnished complete with necessary bolts, nuts and washers as well as connecting nipples of the proper length with gaskets for the fixture connection. All available

or optional anchor foot assemblies shall be utilized. Carriers must fit in available space and shall be of the special narrow type or compact style where necessary. Chair carriers for water closets and urinals shall include flushometer supply pipe support. Flushometer supply pipe shall always be provided with a concealed support regardless of if the design includes a carrier or not.

H. Wherever wood blocking is required to insure adequate support of fixtures and related piping, it shall be provided by this Contractor and it shall be fire treated.

G. All inserts in new concrete construction shall be capable of developing the full strength of the rod or bolt used in them and shall be either continuous insert type or malleable iron concrete inserts for rod sizes 3/8 inch to 7/8 inch. Continuous inserts shall have anchors every 4 inches and shall extend 1-1/2 inches above the back of the insert and shall hook to provide anchor. All inserts shall be tied to the reinforcing steel rods with wire and properly sized reinforcing rods shall be inserted through the special holes, hooks or brackets provided in or on the inserts to securely anchor insert to the structure.

I. Seismic Restraints: It is the intent of this seismic specification to keep all mechanical building system components in place during a seismic event.

1. All mechanical systems must be installed in strict accordance with seismic codes, component manufacturer's and building construction standards. Whenever a conflict occurs between the manufacturer's or construction standards, the most stringent shall apply.

2. This contractor shall engage a professional structural engineer registered in the jurisdiction of this project to review the entire installation to determine all seismic restraint requirements and methods. Contractor shall submit a report outlining the structural engineer’s review as well as seismic restraint shop drawings and supporting calculations prepared by the professional structural engineer for review by the Architect.

3. Seismic restraints shall be designed in accordance with seismic force levels as detailed in the applicable building code.

2.7 SLEEVES, ESCUTCHEONS AND FIRESTOPPING

A. Sleeves shall be furnished and set by this Contractor and he shall be responsible for their proper and permanent location. This Contractor shall be responsible for all core drilling. Core openings shall have link-seal fire-rated penetration closures.

B. This Contractor shall provide steel sleeves at all points where pipes and all other work under his charge pass through masonry, concrete or wood. Sleeves shall have flanges or wings at mind-points to prevent sleeve from slipping through the floor or wall. Pipe sleeves shall be sufficient diameter to provide approximately 1/4 inch clearance around the pipe or the insulation on insulated systems. Sleeves through walls shall end flush with the surface of the walls. Sleeves in floors shall extend one inch above the floor and after installation of piping shall be packed, firestopped and made watertight. Sleeves in exterior walls shall have waterstop plates, shall end flush with the surface of the walls, shall have link-seal penetration closures and shall be of a diameter that is compatible with the Link Seal System.

C. Seal the sleeve penetrations with firestopping and smoke stopping systems as manufactured by Dow Corning, Bio-Shield, Rectorseal Metacaulk, 3M, Fyre Putty or equal. Where pipes

penetrate fire rated construction, the openings shall be packed with the material and system that shall maintain the integrity of the fire rating as detailed in the UL Fire Resistance Directory.

Firestop sealant shall be chemical compatible with the associated plastic pipe material and comply with the FBC System Compatible Program.

Note: Refer to architectural drawings for rated walls and partitions. Where there are no architectural drawings or they do not indicate rated walls and partitions, the following guidelines shall be used. All floors, corridor walls, party walls, mechanical room walls, duct and pipe chase walls, stairwells, trash room and chute walls shall be considered minimum two hour fire rated walls.

D. Products for fire safing of PVC piping shall be Proset System "C" or approved equal.

E. Pipe Sleeves shall be according to the following:

1. Sleeves on pipes passing through masonry or concrete construction shall be scheduled 40 galvanized steel pipe.

2. Sleeves on pipes passing through wood or drywall partitions shall be 16 gauge galvanized steel.

F. Whenever new penetrations to a previously poured slab are required for the installation of floor drains, shower drains, mop receptors, flush floor cleanouts or similar items of plumbing, these penetrations shall be totally sealed with a fire and water stop sealant. Sealant shall be Dow Corning fire stop sealant, Catalog No. 2000. Hourly fire rating in hours must be meet the requirements of the slab being penetrated.

G. Provide chrome plated brass escutcheons with set screws for exposed piping in all areas. In mechanical rooms use plain brass or cast iron escutcheons suitable for painting. All escutcheons shall be sized to fit the bare pipe or insulation in a snug and neat manner. They shall be of sufficient size to cover sleeves openings for the pipes and of sufficient depth to cover sleeves projecting above floors.

H. Bored holes within wood construction. A hole not greater in diameter than 40 percent of the stud width is permitted to be bored in any wood stud. Bored holes not greater than 60 percent of the width of the stud are permitted in nonbearing partitions or in any wall where each bored stud is doubled, provided not more than two such successive doubled studs are so bored. In no case shall the edge of the bored hole be nearer than 5/8 inch (15.9 mm) to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch.

2.8 CLEANOUTS

A. Cleanouts shall be as manufactured by Josam Manufacturing Company, Jay R. Smith Manufacturing Company, Zurn Industries, Inc. or approved equal. The following series numbers are intended to establish a level of quality and comparison.

B. Jay R. Smith 4033L-F-C-XH coated cast iron floor cleanout with nickel bronze top and extra heavy gasket.

2.9 WALL HYDRANTS

A. WH-A shall be Jay R. Smith Model No. 5509QT-SS or SE stainless steel box and cover, bronze nickel plated hydrant, bronze casing, hose connection with integral vacuum breaker, sweat inlet connection, T-handle key and adjustable wall clamp. Length to suit wall thickness. Provide with mild climate, Jay R. Smith Figure No. SAP where applicable.

2.10 FLOOR DRAINS

A. All floor drains shall be the product of one manufacturer such as Jay R. Smith, Josam, Zurn, or approved equal.

B. FD-A: Watts ProLine FD12-5R-2PVC-B-GNB-VP schedule 40 PVC adjustable drain for wooden floors with heel proof nickel bronze strainer, countersunk steel mounting flange, sediment bucket, nickel bronze round funnel and vandal proof screws.

2.11 PLUMBING FIXTURES

A. Water Closet, P-1:
Fixture: American Standard Cadet Pro 215AA.104 elongated floor outlet, vitreous china, 1.28 gpf siphon jet bowl complete with tank, tank cover, fill valve, bolt caps, trip lever and covered seat.
Miscellaneous: Cast brass heavy duty polished chrome-plated loose key angle valve stop with escutcheon and flexible braided stainless steel risers to suit. Closet flange, bolts and wax sealing ring to suit.
Provide white sanitary mildew resistant silicone sealant where china comes in contact with finished floor.

B. Water Closet, P-1A:
Same as P-1 except tank trip lever control shall be installed on wide side of water closet compartment to satisfy the Americans with Disabilities Act (ADA).
Provide tank with American Standard option RH tank trip lever on right side of tank where required.

C. Lavatory, P-2:
Fixture:
Faucet: Grohe 32642.000 Eurosmart single lever handle with pop up drain and stainless steel braided flexible supplies.
Miscellaneous: McGuire heavy duty polished chrome-plated cast brass loose key angle valve kits, flexible braided stainless steel risers, escutcheon. Polished chrome-plated cast brass perforated offset strainer with 1-1/4 inch x 1-1/2 inch polished chrome-plated cast brass adjustable "P" trap, cleanout plug, with PVC adapter extension to wall and escutcheon.
Insulation: Truebro Handi Lav-Guard antimicrobial white flexible vinyl insulation kit with foam inserts.

D. ADA Lavatory, P-2A:
Fixture:
Faucet: Grohe 32642.000 Eurosmart single lever handle with pop up drain and stainless steel braided flexible supplies.
Support: Concealed arm carrier with foot support to suit.
Miscellaneous: McGuire heavy duty polished chrome-plated cast brass loose key angle valve kits, flexible braided stainless steel risers, escutcheon. Polished chrome-plated cast brass

perforated offset strainer with 1-1/4 inch x 1-1/2 inch polished chrome-plated cast brass adjustable "P" trap, cleanout plug, with PVC adapter extension to wall and escutcheon.
Insulation: Truebro Handi Lav-Guard antimicrobial white flexible vinyl insulation kit with foam inserts.

E. Shower, P-3:

F. ADA Shower, P-3A

G. Sink, P-4:
Fixture: Elkay LR-2219-Q self rimming single compartment 22 inches by 19 inches outside dimension by 7-1/2 inches deep, 18gauge type 302 stainless steel sink with 3 faucet holes 4 inch on center and quick clip system.
Faucet: Grohe 31321Eurosmart sigle lever ceramic cartridge, swivel spout and stainless steel braided hose.
Disposer: General Electric GFC525V continuous feed disposer with 1/2 hp, 120 V; 60 Hz; 4.5 amp motor.
Dishwashing Machine: Not in Plumbing Contract. Provide necessary waste connection and water connection with individual angle stop and SA-A.
Miscellaneous: McGuire heavy duty polished chrome-plated cast brass angle valve kits, loose key, flexible braided stainless steel risers, dishwasher connection, 1-1/2 inch x 1-1/2 inch polished chrome-plated cast brass adjustable "P" trap, cleanout plug, with PVC adapter extension to wall and escutcheon.

H. ADA Sink, P-4A:
Fixture: Elkay LRAD-2219-65-4-Q self rimming single compartment 22 inches by 19 inches outside dimension by 6-1/2 inches deep, 18gauge type 302 stainless steel sink with 4 faucet holes 4 inch on center with drain located back center and quick clip system.
Faucet: Grohe 31321Eurosmart sigle lever ceramic cartridge, swivel spout and stainless steel braided hose.
Disposer: General Electric GFC525V continuous feed disposer with 1/2 hp, 120 V; 60 Hz; 4.5 amp motor.
Dishwashing Machine: Not in Plumbing Contract. Provide necessary waste connection and water connection with individual angle stop and SA-A.
Miscellaneous: McGuire heavy duty polished chrome-plated cast brass angle valve kits, loose key, flexible braided stainless steel risers, dishwasher connection, 1-1/2 inch x 1-1/2 inch polished chrome-plated cast brass adjustable "P" trap, cleanout plug, with PVC adapter extension to wall and escutcheon.

I. Refrigerator Connection, P-6:
Refrigerator: Not in Plumbing Contract.
Outlet Box: Oatey 38608 water outlet box with 1/4 turn valve and mounted shock absorber.
Water Supply Kit: Oatey 34015 water supply kit with 1/4 inch polyethylene tubing and installation hardware.

J. Washing Machine Connection, P-x:
Washing Machine: Not in Plumbing Contract.
Washing Machine Connection: Watts model A2C-WB-M1 automatic washing machine shut-off valve with floor mounted leak detector, solenoid valves, recessed box with 2" standpipe drain connection.
Washing Machine Safe Pan: Provide 16 gauge aluminum safe pan with length and width to match the entire length and width of closet with a minimum of 2 inches high.

Floor mounted leak detector shall be placed within safe pan.

K. Mop Receptor, P-5:
Fixture: Fiat Products Model MSB-2424, 24 inches by 24 inches by 10 inches high one piece molded stone complete with integral 3 inch stainless steel drain body, strainer, stainless steel wall guard, bumperguards on all exposed sides, hose with bracket and mop hanger.
Faucet: Speakman SEF-9000-TW-CK-RCP sink fitting with vacuum breaker, hose threads, pail hook, wall brace, four arm handles, wall mounted eye wash with two spray heads, stay open ball valve and thermostatic mixing valve. Provide SA-A on supply pipe piping between faucet and thermostatic mixing valve. The shut-off valves serving the cold water and hot water supply piping serving this fixture shall be provided with a lockout cover device to prevent the unauthorized shutdown of services. Pad locks shall be the breakaway type for quick access during an emergency.
Chemical Feed: Apollo 70-803-01 1/2 inch ball valve and Watts LF008PCQT anti siphon vacuum breaker on cold water services to chemical feed connection. Provide escutcheon where water pipe penetrates wall. Locate on wall directly above fixture faucet and not to interfere with operation of this faucet.
Miscellaneous: "P" trap with cleanout to suit.

The shut-off valves serving the cold water and hot water supply piping serving this fixture shall be provided with a lockout cover device to prevent the unauthorized shutdown of services. Pad locks shall be the break away type for quick access during an emergency.

L. Drinking Fountain, P-6:
Fixture: Halsey-Taylor Model OVL-II SEBP stainless steel twin oval receptors with bi-level handicapped and standing heights with mounting frame and semi-circular 180 degree push bar.
Miscellaneous: McGuire heavy duty polished chrome-plated cast brass loose key angle valve kit, flexible braided stainless steel risers, two 1-1/4 inch x 1-1/2 inch cast brass adjustable "P" trap, cleanout plug, extension to wall with escutcheon.

2.12 WATER HEATERS

A. Electric water heater shall be as manufactured by State Industries.

B. Water supply piping serving thermal expansion absorber and water heaters shall be provided with a shutoff valve and check valve with a 1/8 inch hole drilled in the clapper.

C. Water heater shall be State ES666DORT electric heater with a heating element rated at (2) 4.5 KW non simultaneous, 208 volts, 3 ph, 60 cycle AC. Water heater shall be listed by Underwriters Laboratories and meet or exceed the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA 90.1 shall be 66 gallon capacity with a recovery capacity of 21 GPH at a temperature rise of 90°F with 4500/4500 non simultaneous upper/lower element wattage.

Water heater safe pan shall be Oatey 34154 26" round by 2 1/8" aluminum pan with 1" PVC drain. Plastic polymer water heater pan will not be approved as an equal. Minimum dimensions shall be 2" depth and 2" clear diameter space to satisfy the Code.
Indirect waste shall extend to the floor drain. Water sensor probe shall be securely placed at lowest portion of safe pan.
Leak detection shall be Floodmaster FM-080 leak detection with water main shutoff system

Thermal expansion tank shall be Amtrol Inc. ST-5-C precharged thermal expansion absorbers designed and constructed per ASME Code, Section VIII. Expansion absorbers shall have precharged air chamber, steel outer shell, rigid polypropylene liner, heavy duty butyl diaphragm and stainless steel connection.

2.13 SHOCK ABSORBERS

A. Maintenance free water hammer arresters shall be furnished and installed at all locations in the water systems where quick acting valves are installed as well as wherever water hammer may occur.

B. Examples of such locations are as follows:
   1. As indicated on the drawings.
   2. Prior to all in-line solenoid valves.
   3. Dishwashing Machines.
   4. All laundry equipment.
   5. Emergency equipment.

C. Water hammer arresters shall be as manufactured by Josam Manufacturing Company, Jay R. Smith Manufacturing Company or Zurn Systems. Arresters shall be installed at each and every multiple of fixtures or items as listed above and/or as indicated on drawings. Water hammer arresters may serve groups of fixtures.

D. Sizing, placement, tested, certified and shall be in accordance with Plumbing and Drainage Institute Standard PDI-WH-201 and the manufacturer's recommendations.

E. Water hammer arresters shall be as follows:

Designation	Fixture Unit Rating	Model
SA-A	1-11	Jay R. Smith 5005

F. Air chambers will not be approved as an equal.

2.14 PRESSURE GAUGES

A. Pressure gauge shall be manufactured by Trerice Company, Taylor Instrument or Marshalltown Manufacturing.

B. Interior water pressure gauge shall be Trerice Company 700 Series with 4 inch diameter face.
   Interior natural gas shall be by Trerice Company 760B with 4 inch diameter face.
   Exterior natural gas shall be by Trerice Company 766SS with 4 inch diameter face.

C. Pressure gauges shall have brass movement, aluminum case, double strength clear glass window with black embossed figures and graduations on a white dial face, with 1 percent accuracy of scale range.

D. Gauges shall be furnished with snubbers and needle valve shut off valves.

E. Gauges shall be furnished with ranges that will locate the intended pressure at the point of application approximately midpoint on the range scale.

2.15 THERMOMETERS

A. Thermometers shall be Trerice Company SX9 solar light powered digital thermometer with 7 inch adjustable angle cast aluminum case and LCD display.

B. Thermometers shall be furnished with the temperature range of -40°F to 300°F.

C. Thermometers shall be furnished complete with all necessary sockets, wells, connectors and accessories required for installation suitable for the service in which installed. Extension necks shall be furnished for insulated piping.

2.16 DISINFECTION OF WATER SYSTEMS

A. All water systems shall be disinfected in accordance with Local Public Health and Plumbing Code Requirements.

2.17 TESTS AND APPROVALS

1. Pipe lines shall be blown or flushed clean, before piping tests are applied. All plumbing work shall be tested as herein specified. No portion shall be covered, concealed, used or made inaccessible to testing, inspection, repair, correction or replacement until tests thereof have been satisfactorily completed in the presence of the Architect's Authorized Representatives. The Plumbing Subcontractor must accommodate his testing operations to the progress of the project as a whole. Correct all defects appearing under test and repeat the tests until all parts of the work have withstood them successfully.

2. Furnish all labor, material and services for testing, including testing plugs, pumps and compressors; he shall make and remove all temporary piping connections required for the tests and shall dispose of test water and all wastes after tests. Leave all work in good order, ready for full use.

3. Tests on all plumbing systems shall be made in accordance with the requirements of the Local Plumbing Code and the codes, standards, recommended practices and manuals of the National Fire Protection Association.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. Prior to the work of this section, this Contractor must ascertain that preceding work has been accomplished in a manner to permit compliance with the level of quality required by this Section.

B. The entire work provided in this specification shall be constructed and finished in every respect in a workmanlike and substantial manner. It is not intended that the drawings shall show every pipe, fitting, and appliance. Furnish all parts as may be necessary to complete the system in accordance with the best trade practices and to be the satisfaction of the Architect, Engineer and General Contractor.

C. This Contractor shall keep other contractors fully informed as the shape, size and position of all openings required for his apparatus and shall give full information to the General

Contractor or other contractors sufficiently in advance of the work so that all openings may be built in advance. Furnish and install all sleeves, supports, etc., specified or required.

D. In the case of failure on the part of this Subcontractor to give proper and timely information as noted above, he shall do his own cutting and patching, or have same done by the General Contractor at this subcontractor's expense, but in any case, without extra expense to the Owner and General Contractor.

E. This Contractor shall obtain detailed information from the manufacturer of apparatus as to the proper method of installing and connecting same. He shall also obtain all information from the General Contractor and the other contractors which may be necessary to facilitate his work and the completion of the whole project.

3.2 CORE DRILLING

A. All holes through concrete or masonry for the passage of plumbing piping not provided by sleeves or openings at the time of casting, shall be cut by the Plumbing Contractor using an approved core boring machine with diamond edge bit and vacuum sludge removal device. The size of holes shall provide for fire stopping around a pipe. The location of all core drilled holes shall be coordinated with the structural reinforcing and be reviewed by the Architect prior to commencing work.

B. Prior to coring, the Plumbing Contractor shall submit a minimum 1/8 in. scale plan, dimensioning the location of proposed cored opening locations and indicating the core diameter. Prior to developing the coring plan, the Plumbing Contractor shall examine the site carefully in an attempt to determine whether there are structural, mechanical or electrical obstacles in the proposed coring locations. Once the plans are reviewed by the Architect and Owner's representative, the Plumbing Contractor may proceed with caution. If an electrical conduit, for example, was hit during coring operations, and it was determined that the Plumbing Contractor was negligent by not noting a conduit turning into the slab below, he would be responsible for the repair cost. If the Contractor were not found to be negligent, then the Owner would assume the cost of the repair.

3.3 TESTING PIPING SYSTEMS

A. Test all work in the presence of the Architect/Engineer and/or Owner, Owner's representative and Plumbing Inspector as called for in local codes.

B. After soil, waste and vent piping is in place and before being furred in, plug lower ends and fill. The system shall be left tight under these conditions and water level shall be maintained intact for a period of at least four hours.

C. Test domestic water piping and service by applying a hydrostatic pressure of 125 psi using a pump for this purpose. Make sure that all lines are properly plugged or capped, and that air has been vented before applying pressure, which shall remain constant without pumping for one hour at least.

D. Gas system piping shall be tested at a pressure of 50 psig and pressure shall be held for two hours minimum.

E. This Contractor shall furnish all equipment, labor and materials, required for these tests.

F. Any leaks in joints or evidence of defective pipe or fittings disclosed by tests shall be immediately corrected by replacing defective parts with new joints or corrected materials. No makeshift repairs effected by caulking threaded pipe with lead wool, application of wicking or patented compounds being permitted. Perform smoke tests as required by local code or by the Architect/Engineer.

3.4 PROTECTION AND CLEANING

A. Each subcontractor shall be responsible for his work and equipment until finally inspected, tested and accepted. Carefully store materials and equipment, which are not immediately installed after delivery on site. Close open ends or work with temporary covers or plug during construction to prevent entry of obstructing materials.

B. Each subcontractor shall protect work and materials of other trades from damage that might be caused by his work or workman and make good damage thus caused.

C. The premises shall be kept reasonably clean at all times, and rubbish shall be removed as directed by the General Contractor.

D. Upon completion of this work, the Contractor shall clean all fixtures and equipment and replace damaged parts. Upon failure of this Contractor to fulfill his obligation, this work will be taken care of at his expense.

3.5 WORK COORDINATION AND JOB COORDINATION

A. Plumbing equipment shall not be installed in congested and possible problem areas without first coordinating the installation of same with the other trades and the General Contractor.

B. Particular attention shall be directed to the coordination of system with all equipment of other trades installed in and above the ceiling areas. Conflicts in heights and clearance above hung ceilings shall be brought to the attention of the General Contractor for a decision before equipment is installed.

C. Furnish to the General Contractor and other trades all information relative to the position of the plumbing installation that will affect them so that they may plan their work and installation accordingly.

3.6 SUPPLEMENTARY STEEL, CHANNEL AND SUPPORTS

A. Furnish and install all supplementary steel, channels and supports required for the proper installation, mounting and support of all equipment.

B. Supplementary steel and channels shall be firmly connected to building construction in a manner approved by the Architect/Engineer.

C. The type and size of the supporting channels and supplementary steel shall be determined by the Plumbing Subcontractor and shall be sufficient strength and size to allow only a minimum deflection in conformance with the manufacturer's requirements for loading.

D. All supplementary steel and channels shall be installed in a neat and workmanlike manner parallel to the walls, floor and ceiling construction. all turns to be made with 90 degree fittings, as required to suit the construction and installation conditions.

3.7 SLEEVES AND INSERTS

A. Sleeves shall be furnished, set and properly secured in place and at all points where piping passes through masonry or concrete. All sleeves shall be of sufficient diameter to provide 1/4-in. clearance around the pipe.

B. Sleeves through concrete slabs, and interior concrete and masonry walls or partitions shall be steel pipe. Fire stop annular openings between sleeves and pipes at floor slab passages and make watertight. Galvanized sleeves and copper piping shall not be placed in concrete.

C. Install UL listed and FM approved inserts or other anchoring devices in concrete and masonry construction as required to support piping. Inserts shall be of the adjustable type as manufactured by Carpenter and Patterson, Grinnell, or Fee and Mason.

3.8 SYSTEM IDENTIFICATION

A. All valves on pipes of every description shall have circular brass valve tags of at least 1-1/2 in. in diameter, attached with brass hooks to each valve stem. Stamp number of the valve and the service, such as "HW", "CW", "GAS", etc., for hot water, cold water, gas, etc., respectively. The numbers of each service shall be consecutive and shall correspond with the numbers indicated for valves and controls on the record drawings and on three printed valve lists. These printed lists shall state number and locations of each valve and control and the section, fixture or equipment which it controls.

B. The printed valve lists shall be prepared in a form to meet the approval of the Architect and Engineer and one copy shall be framed under glass and mounted in approved locations.

C. All plumbing lines and equipment shall be identified by pipe markings, which shall be provided by this Contractor. Markers shall be applied every 20 ft. Markings shall indicate pipe content and direction of flow. The markers shall be as manufactured by Seton Name Plate Corp. or equal.

3.9 SAFETY PRECAUTIONS

A. Furnish, place and maintain proper guards for the prevention of accidents and any other necessary construction required to secure safety of life and property.

3.10 INSERTS AND OPENINGS

A. Inserts: Install inserts or other anchoring devices in concrete and masonry construction as required to support piping. Inserts shall be of the adjustable type as manufactured by Carpenter and Patterson, Grinnell of Fee and Mason.

B. Escutcheons: All exposed pipe, uncovered, passing through walls, floors or ceilings shall be fitted with one piece chrome plated brass escutcheons with set screw holding in position. Floor escutcheons to be deep enough to fit over sleeves, fastened to pipe and extending down to floor.

3.11 PLANS AND SPECIFICATIONS

A. The drawing showing layout of the plumbing systems indicate the approximate location of outlets, apparatus and equipment are schematic. The final determination as to the routing shall be governed by structural conditions and other obstructions.

B. The right to make any reasonable change in the location of outlets, apparatus and equipment up to the time of the roughing-in is reserved by the Architect and Engineer without involving any expense to the Owner or the General Contractor.

C. The specifications supplement the drawings and provide specifics pertaining to the methods of material to be used in the execution of the work.

3.12 SANITARY WASTE, STORM WATER AND VENT SYSTEMS

A. Furnish and install piping to take wastes from all soil and waste stacks, fixtures, drains and equipment as indicated and/or described in these plans and specifications.

B. Unless specifically noted otherwise on the plans, all horizontal piping 4 in. and larger shall be pitched at the rate of 1/8 in. per foot in the direction of the flow. Horizontal piping 3 in. and smaller shall be pitched at the rate of 1/4 in. per foot in the direction of the flow.

C. Vent System: Furnish and install piping to vent all stacks, fixtures, traps and appliances as indicated on the drawings and/or required to meet the Plumbing Code. All vent piping shall be concealed where possible with the horizontal pipe pitching back toward fixtures to allow connection to drain. Whether indicated on plan, riser diagram or not, offset vents below the roof to avoid air intakes, equipment, penthouse mansard etc., bring vents through the roof a minimum of 10 feet away from air intakes, windows, and operable sash and 10 ft. away from other obstructions.

3.13 HOT AND COLD WATER SYSTEMS

A. Furnish and install complete cold, hot and hot water return systems to service all fixtures and equipment indicated on the drawings or specified as requiring cold or hot water. Cold water piping shall start at the connection to the water main indicated on plan and extend to all fixtures and equipment, including piping, fittings and valves requiring connections. Hot water piping shall extend from the hot water heater to all fixtures and equipment, including piping, fittings and valves. In general, piping shall pitch upward in the direction of flow with each branch and riser separately valved and with 1/2 in. hose end drains on the outlet side of the valve and at all low points in the systems. Install valves for each battery of fixtures and other valves as necessary to isolate all parts of these systems. All valves shall be accessible.

B. Hot water piping shall be circulated as shown on plans to ensure uniform temperatures throughout the system. All branches larger than 50 ft. shall be provided with hot water return lines.

3.14 INSULATION

A. Ensure that all pipe and fitting 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 and fittings has been completed prior to installing insulation.

D. General

1. 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.

2. Install insulation on piping subsequent to installation of heat tracing, painting, and acceptance tests.

3. 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.

4. Maintain the integrity of factory-applied vapor barrier jacketing on all pipe insulation, protecting it against puncture, tears or other damage. All staples used on cold pipe insulation shall be coated with suitable sealant to maintain vapor barrier integrity.

E. Fittings

1. Cover valves, fittings, and similar items in each piping system using one of the following:

2. Mitered sections of insulation equivalent in thickness and composition to that installed on straight pipe runs.

3. Insulation cement equal in thickness to the adjoining insulation.

4. Owens Corning PVC Fitting Covers insulated with material equal in thickness and composition to adjoining insulation.

F. Penetrations

1. Extend piping insulation without interruption through walls, floors, and similar piping penetrations, except where otherwise specified.

G. Joints

1. Butt pipe insulation against hanger inserts. For hot pipes, it is recommended all joints be staggered when operating temperature is over 400F (204C) double layer. Seal jacketing according to type being used. For cold piping, seal self-sealing laps by firmly rubbing down surface of tape and flap.

2. All pipe insulation ends shall be tapered and sealed, regardless of service.

H. Vertical Piping

1. If specified on contract drawings, all insulated, exposed vertical piping within the building and all insulated piping exposed to the outdoors shall be additionally jacketed with 0.016" thick (0.4 mm) (minimum) aluminum. Vertical piping shall be protected to a height of 8'-0" (2.4 m) above the floor.

I. Field Quality Assurance

1. 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.

J. Protection

1. Replace damaged insulation, which cannot be satisfactorily repaired, including insulation with vapor barrier damage and moisture-saturated insulation.

2. 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.

K. Safety Precautions

1. 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.

2. The insulation contractor shall conduct all job site 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.

3.15 CHLORINATION

A. Each water piping system (cold water, hot water, hot water circulation, non potable cold water, non potable hot water, non potable hot water circulation and tepid water) shall be cleaned and disinfected by this Contractor. Cleaning and disinfection shall be performed after all pipes, valves, fixtures and other components of the systems are installed, tested and ready for operation.

B. All water piping systems shall be thoroughly flushed with clean potable water prior to disinfection to remove dirt and other contaminants.

C. Disinfection shall be done using sodium hypochlorite in the following manner:

1. A service cock shall be provided and located at the water service entrance. The disinfecting agent shall be injected into and through the system from this cock only.

2. The disinfecting agent shall be injected by a proportioning pump or device through the service cock slowly and continuously at an even rate. During disinfection, flow of disinfecting agent into main water supply is not permitted.

3. All sectional valves shall be opened during disinfection. All outlets shall be fully opened during injection and the residual checked with orthotolidin solution.

4. When the chlorine residual concentration, calculated on the volume of water the piping will contain indicated not less than 50 ppm (parts per million) at all outlets, then all valves shall be closed and secured.

5. The residual chlorine shall be retained in the piping systems for a period of not less than 24 hours.

6. After the retention, the residual shall be not less than five parts per million. If less, then the process shall be repeated as described above.

7. If satisfactory, then all fixtures shall be flushed with clean potable water until residual chlorine by orthotolidin tests shall be not greater than the incoming water supply.

D. All work and certification of performance shall be performed by approved applicators or qualified personnel with chemical and laboratory experience. Certification of performance shall indicate:

1. Name and location of the job and date when disinfection was performed.

2. Material used for disinfection.

3. Retention period of disinfectant in piping system.

4. ppm chlorine during retention.

5. ppm chlorine after flushing.

6. Statement that disinfection was performed as specified.

7. Signature and address of company or person performing disinfection.

E. Upon completion of final flushing (after retention period) the plumbing subcontractor shall obtain a minimum of one water sample from each water piping system and submit samples to a State approved laboratory. Samples shall be taken from faucets located at highest floor and furthest from meter or main water supply. The laboratory report shall show the following:

1. Name and address of approved laboratory testing the samples.x

2. Name and location of job and date the samples were obtained.

3. The coliform organism count. (An acceptable test shall show the absence of coliform organisms.)

F. If analysis does not satisfy the above minimum requirements, the disinfection procedure shall be repeated.

G. Before acceptance of the systems, this Contractor shall submit to the Project Manager and Clerk of Works for his review, three (3) copies of Certification of Performance as specified above.

H. Under no circumstances shall this contractor permit the use of any portion of domestic water systems until properly disinfected, flushed and certified.

3.16 WATER SERVICE

A. Furnish and install a complete water service piping system to five feet outside the building foundation including piping, fittings and supports, valves, and connection to the water main as shown on the drawings and specified herein.

B. All materials and installation shall be in complete accord with the requirements of the local water department and NFPA Pamphlet. Pay all inspection fees. Include in bid.

C. Backfilling of trench excavation will not be permitted until after the domestic water service line has been installed, inspected, tested and accepted. With prior written approval of the Architect, partial backfill may be installed, leaving joints exposed.

D. When a section of pipe is ready for testing, the line shall be completely filled with water, thoroughly cleaned for elimination of all air, and a leakage test made.

E. Testing shall be carried out in an approved manner and shall consist of filling the main with water from the municipal distribution system and maintaining a hydrostatic test pressure of 200 per NFPA 24 Standards. All visible leaks shall be made tight in an approved manner. Any defective pipe, fitting or material shall be removed and replaced at the expense of the Contractor and the test shall be repeated until the conditions of allowable leakage are met. Thoroughly flush the service per NFPA 24 Standards.

F. Disinfection shall be performed in an approved manner in conforming with AWWA "Procedure for Disinfecting Water Mains" designation C601-48 and shall be witnessed by the Architect or his authorized agent. Before disinfection, the line shall be flushed with water to create as high a velocity as practicable.

G. Following chlorination and after the entire length of the line is ready for operation, all treated water shall be flushed thoroughly from the newly laid pipe line, at its extremities, until the replacement water throughout its length will upon test, both chemical and bacteriological, be provided equal to the quality introduced at the permanent source of supply. Where bends turn down and the resulting thrust will be upward, provision to restrain the thrust shall be made with joint harnesses or thrust blocks. Submit proposed methods to Architect for approval.

END OF SECTION

SECTION 23000
HVAC

PART 1: GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY OF WORK

A. Provide complete functional Heating, Ventilating and Air Conditioning system as shown on Mechanical Construction Documents.

1.3 REFERENCE STANDARDS

A. NFPA Standards

B. ANSI Standards

C. ASME Standards

D. ASTM Standards

E. AWWA Standards

F. ASHRAE Standards

G. SMACNA Standards

H. OSHA Standards

I. NEBB Standards

J. Local Codes and Ordinances

K. Owner's Insurance Company Requirements

L. Where the contract documents indicate more stringent requirements than the above codes and ordinances, the contract documents shall take precedence.

M. File all documents, pay all fees and secure all permits, inspections and approvals necessary for the work of this section.

1.4 CONTRACT DRAWINGS & SPECIFICATIONS

A. The Contract Drawings are generally diagrammatic and convey the Scope of Work and General Arrangement of apparatus and equipment. The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Architect and Engineer before being installed. The Subcontractor shall follow drawings in laying out work and shall check drawings of the other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. If directed by the General Contractor, Engineer and/or Architect, the Subcontractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or before proper execution of the work.

B. Specifications: The specifications are intended only to complement the drawings; however, work detailed and/or noted only on the drawings or work described only in the specifications

shall all be considered as part of the scope of work.

1.5 CONFLICT BETWEEN PLANS AND SPECIFICATIONS

A. In case of conflict between the contract drawings and specifications, the Engineer shall determine which takes precedence.

1.6 SHOP DRAWINGS AND PRODUCT DATA

A. SUBMITTALS: Submit shop drawings, manufacturers data and certificates for equipment, materials and finish, and pertinent details for each system where specified in each individual section, and have them approved before procurement, fabrication, or delivery of the items to the job site. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable industry, and technical society publication references, and other information necessary to establish contract compliance of each item the Contractor propose to furnish.

B. Submit in accordance with Division 1.

C. It is the intent of the these specifications that all equipment, materials and workmanship used on this project be in complete conformance with all local, state and national codes, ordinances and standards.

D. Substitutions shall be equivalent to specified equipment in all aspects of quality and performance and shall conform to the intent stated above. It is the contractor's responsibility to submit only those items that meet these requirements. Should any non-conforming items be installed, they shall be replaced by the contractor at no additional cost to the owner.

E. The approval of the equipment does not relieve the Subcontractor of responsibility of shop drawing errors related to details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the Specifications, and/or job conditions as they exist.

F. Refer to General Requirements for the substitutions of equipment and submittal of shop drawings. If apparatus or materials are substituted for those specified, and such substitution necessitates changes in, or additional connections, piping, supports, or construction, it shall be provided. Contractor to assume cost and entire responsibility thereof.

1.7 INSPECTION AND TESTS

A. During the progress of the work it shall be subject to the inspection of the Owner and to such other inspectors, as may have jurisdiction.

B. At completion of the work, Contractor shall submit to the Owner's representative in writing a statement stating: (1) that the work is complete; (2) that the entire installation is in accordance with the specification; (3) that preliminary tests have been made; and (4) that the work is ready for final inspection and test.

C. A final inspection of the installation to determine compliance with the drawing and specifications will be made by the Owner's representative. Work will be checked for quality of materials, quality of workmanship, proper installation and finished appearance. This Contractor shall provide the services of the project foreman for inspection purposes. The foreman shall remove and reinstall access panels, ceiling tiles, etc., as required to facilitate any inspections required by the Owner's representative.

D. The Contractor shall arrange and conduct operating tests on all equipment in the presence of the Owner's representative. The component parts of systems and the various systems shall be

demonstrated to operate in accordance with the requirements and intent of this specification. Any non-complying or defective materials or workmanship disclosed as a result of the inspection and the Contractor shall correct tests promptly, and the tests repeated as often as necessary until approved and accepted by the Owner's representative.

1.8 ELECTRICAL EQUIPMENT

A. Electrical components of mechanical equipment and systems, such as motors, factory mounted motor starters, disconnects, and control equipment shall be provided under the related Section of Division 15.

B. Temperature control equipment, including thermostats, zone valves, relays, aquastats, etc. shall be provided under related sections of Division 15. Temperature control wiring not specifically shown on electrical drawings shall be provided under related Section of Division 15.

C. Upon completion of temperature control system wiring, the responsibility of the control system will fall under Division 15.

1.9 OPENINGS IN EXTERIOR WALLS OR ROOF

A. Openings in exterior walls or roof shall be kept properly plugged and caulked at all times, except when being worked on to preclude the possibility of flooding due to storm or other causes. After completion of work, openings shall be permanently sealed and caulked in a manner approved by the Architect.

1.10 GUARANTEE

A. Except as otherwise specified, all work, materials and equipment shall be guaranteed against defects resulting from the use of inferior materials, equipment, or workmanship for one year from the date of final completion of the contract, or from full acceptance by the Owner, whichever is earlier.

B. If, within any guarantee period, repairs or changes to guaranteed work are required as a result of the use of defective materials or equipment, inferior workmanship or work that is not in accordance with the terms of the contract, and upon receipt of notice from the Owner, the following shall be done without expense to the Owner.

C. Place in satisfactory condition in every particular all of such guaranteed work and correct all defects therein.

D. Repair all damage to the building or site/equipment or contents thereof which is the result of the use of defective materials or equipment or inferior workmanship, or of work not in accordance with the terms of the contract.

E. Make good any work or materials, or the equipment and contents of said building or site disturbed in fulfilling any such guarantee.

F. In fulfilling the requirements of the contract or of any guarantee embraced in or required thereby, any work guaranteed under another contract is disturbed, restore such disturbed work to original condition and guarantee such restored work to the same extent as it was guaranteed under such other contract.

G. If upon failure to proceed promptly after notice to comply with the terms of the guarantee, the Owner may have the defects corrected and Contractor and his surety shall be liable for all expenses incurred.

H. This Contractor shall obtain in the General Contractor's and Owner's name, the standard

written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities, which the Contractor may have by law or other provisions of the Contract Documents. The guarantee shall be for a period of one (1) year minimum from the date of acceptance or final payment.

1.11 CLEANING OF SYSTEM

A. Thoroughly clean piping and equipment of all foreign substances inside and out before placing in operation. All air handling equipment shall be provided with “construction filters” for use during construction. Once construction is substantially complete and prior to final testing adjusting and balancing, furnish and install new filters for each piece of equipment.

B. If any foreign matter should stop any part of a system after being placed in operation, clean and reconnect system.

1.12 TEMPORARY OPENINGS

A. Coordinate construction and provide temporary openings in the building as required for the admission of equipment furnished under this Division.

1.13 DEFINITIONS

A. "Piping" includes, in addition to pipe, all fittings, valves, hangers, and other accessories relating to such piping.

B. "Concealed" means hidden from sight in trenches, chases, furred spaces, shafts, hung ceilings, embedded in construction or in crawl spaces.

C. "Exposed" means not installed underground or "concealed" as defined above.

D. "Provide" means furnish and install complete and ready to operate.

1.14 EQUIPMENT DEVIATIONS

A. Where proposals to use an item of equipment other than that specified which requires any redesign of the structure, partitions, foundations, piping, wiring or any other part of the mechanical, electrical or architectural layout, all such redesign, and all new drawings and detailing required therefore, shall be prepared by the Architect at the Contractor’s expense.

B. Where such approved deviation requires a different quantity and arrangement of ductwork, piping, wiring, conduit, and equipment from that specified or indicated on the drawings, furnish and install any such ductwork, piping, structural supports, insulation, controllers, motors, starters, electrical wiring and conduit, and any other additional equipment required by the system, at no additional cost to the Owner.

1.15 COOPERATION WITH OTHER TRADES

A. Give full cooperation to other trades and furnish in writing to the Architect any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

B. Coordination drawings shall be initiated by this contractor. It this contractor’s responsibility for preparation of project coordination drawings showing the installation of all equipment, piping, ducts and accessories to be provided under Section 15500 of the Specifications. These drawings shall be prepared at not less than 1/4 in. = 1 ft. scale, and shall show building room layouts, structural elements, ductwork and lighting layouts of function. Drawings shall indicate horizontal and vertical dimensions, to avoid interference with structural framing, ceilings, partitions, and other services. A reproducible copy of each drawing prepared shall

then be submitted to each Contractor working under Sections 15300, 15400 and 16000, who shall be responsible to coordinate his equipment and systems and shall show these on the drawings submitted. After each Contractor has fulfilled his obligation, he shall return the drawings to the HVAC Contractor. After each drawing has been coordinated between trades, and appropriate revisions made, each trade shall sign each drawing, indicating acceptance of the installation. The HVAC Contractor shall then print the coordination original and these prints submitted through the General Contractor to the architect for review and comment, similar to shop drawings. Comments made on these drawings shall result in a correction and re-submittal of the drawings.

C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

1.16 PROJECT RECORD DOCUMENTS:

A. Each Contractor shall record clearly, neatly, accurately, and promptly as work progresses the following data:

1. Changes made resulting from change orders or instructions issued by the Architect.
2. Changes in routing made to avoid conflict with other trades or structural conditions.
3. Final location of equipment and panels if different than contract documents.

B. Upon completion of the project submit to the Architect a set of electronic media noting "as built" conditions indicating all variations and deviations of his work from contract documents.

1.17 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. Operating Instructions: Provide operating instructions to the Owner's designated representative with respect to the operation functions and maintenance procedures for all equipment and systems installed. The cost of providing a manufacturer's representative at the site for instructional purposes shall be included in the Contract Price.

B. Maintenance Manuals: At the completion of the project, turn over to the General Contractor four (4) complete manuals in 3-ring binders, indexed, containing the following:

1. Complete shop drawings of all material and equipment of this section.
2. Operation descriptions of all systems.
3. Names, addresses and telephone numbers of all suppliers of system components.
4. Preventative maintenance instructions for all systems.
5. Spare parts list of all system components.
6. Copies of all valve charts.

1.18 PROTECTION

A. Protect all work and material from damage by work and workmen, and accept liability for all damage thus caused.

B. Be responsible for work and equipment until finally inspected, tested, and accepted. Protect work against theft, injury or damage; and carefully store material and equipment received on site, which is not immediately installed. Close open ends of work with temporary covers or plugs during storage and construction to prevent entry of obstructing material.

1.19 SCAFFOLDING, RIGGING AND HOISTING

A. Provide scaffolding, rigging, hoisting and services necessary for delivery, erection and installation of material, equipment and apparatus furnished under this division. Remove same from premises upon completion of work.

1.20 MATERIALS AND WORKMANSHIP

A. All materials and apparatus required for the work, except as specifically specified otherwise, shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building spaces. Where no specific kind or quality of material is given, a first-class standard article as approved by the Architect shall be furnished.

B. Furnish the services of an experienced foreman who shall be constantly in charge of the installation of the work, together with all skilled workmen, fitters, metal workers, welder, helpers, and labor required to unload, transfer, erect, connect adjust, start, operate, and test each system.

1.21 QUIET OPERATION AND VIBRATION

A. Work shall operate under all conditions of load without any objectionable sound or vibration. In case of moving machinery, sound, or vibration noticeable outside of room in which it is installed, or annoyingly noticeable inside its own room, will be considered objectionable. Sound or vibration conditions considered objectionable shall be corrected in an approved manner at no expense to the Owner. Vibration control shall be means of approved vibration eliminators in a manner as recommended by the manufacturer of the eliminators.

1.22 ACCESSIBILITY

A. Assure and be responsible for the adequacy of shafts and chases, the adequate clearance in double partitions and hung ceilings for the proper installation of the work. Cooperate with all other trades whose work is in the same space. Such spaces and clearances shall, however, be kept to the minimum size required.

B. Locate all equipment, which must be serviced, operated, adjusted or maintained fully accessible positions. Equipment shall include, but not be limited to, valves, traps, cleanouts, motors, controllers, filters, dampers, starters, coils, fire dampers, smoke dampers and drain points. If required for better accessibility, furnish access doors for this purpose. Minor deviations from drawings may be made to allow for better accessibility, and the engineer shall approve any change.

C. Provide access panels for installation in concrete block walls or gypsum wallboard ceilings and partitions in locations, which require access for service to the items located behind the permanent gypsum wallboard or concrete block finish.

D. Access panels shall be installed where required to gain access to valves, dampers, controls, etc. Panels shall be flush, insulated, contain continuous steel hinge and screwdriver operated latch. Panels shall be rated equal to the assembly that they are being installed in panels shall be UL listed.

E. Access panels located in fire rated partitions shall be fire panels. The frame and panel assembly of these fire panels shall be manufactured under the Factory Inspection Service of the Underwriters' Laboratories, Inc., and shall bear a label reading: "Frame and Fire Panel Assembly, Rating 2 hours. (B) Temperature Rise 30 Minutes, 250° F. Maximum." Rated panels shall be equipped with automatic closing mechanism and be self-latching.

F. Panels shall be provided with screwdriver operated flush cam locks.

G. Panel size shall be 12 inches x 12 inches except furnish a larger size if required to service a particular item. The exact location and size of each access panel shall be reviewed with, and approved by, the Engineer.

1.23 CUTTING AND PATCHING

A. Provide all cutting and patching necessary to install the work specified in this division. Patching shall match adjacent surfaces.

B. No structural members shall be cut without the approval of the Structural Engineer, and all such cutting shall be accomplished in a manner directed by the Structural Engineer.

1.24 GROUNDING

A. All components of mechanical piping systems shall be properly grounded to building ground. Where ground path is interrupted by non-conductive materials, appropriate bonding or grounding to building ground shall be provided.

1.25 WATERPROOFING

A. Where any work pierces waterproofing including waterproof concrete, the method of installation shall be as approved by the Architect before work is started. Furnish all necessary sleeves required.

PART 2: PRODUCTS

2.1 SLEEVES, INSERTS AND ESCUTCHEONS

A. Provide sleeves for all work passing through floor, wall, and ceiling construction. Locate and provide sleeves and inserts before the floor, wall or ceiling is constructed. If this contractor does not comply with the above, he shall bear all costs incurred for cutting and patching required for the installation of sleeves and inserts. Holes required for sleeves in existing walls and floors, or to conform to the above shall be saw cut or core drilled. This Contractor shall provide all drilling required for the installation of hangers.

B. Pipe sleeves through outside walls shall be Schedule 80 black steel pipe with 150 lb. black steel slip-on welded flanges welded at the center of the outside. Extend sleeves 1/2 inch beyond each side of the wall. Pack the space between sleeve and pipe with oakum to within 2 inches of each face of the wall. Pack the remaining space and make watertight with an approved waterproof compound.

C. Pipe sleeves through concrete floors or interior masonry walls shall be Schedule 40 black steel pipe, set flush with finished wall or ceiling surfaces, but extending 2 inches above finished floors. Plastic, PVC, or light metal sleeves shall not be installed.

D. Provide individual or strip type inserts pressed steel construction with accommodation for removable nuts and threaded rods up to 3/4-inch diameter, permitting lateral adjustment. Individual inserts shall have an opening at the top to allow reinforcing rods to 1/2 inch diameter to be passed through the insert body. Strip inserts shall have attached rods with hooded ends to allow fastening to reinforcing rods.

E. Where pipe motion due to expansion and contraction will occur, make sleeves of sufficient diameter to permit free movement of pipe. Where sleeves pass insulated pipes, the sleeves shall be large enough to pass the pipe and the insulation. Check floor and wall construction finishes to determine proper length of sleeves for various locations.

F. Pack the space between sleeves and structure, and sleeves and pipes or ducts passing through fire rated interior walls, floors, and ceilings with an approved fire and smoke proof packing material. Fire-stopping material shall maintain its dimensions and integrity while preventing the passage of flame, smoke, and gases under conditions of installation and user when exposed to the ASTM E119 time-temperature curve for a time period equivalent to the rating of the assembly penetrated. Cotton waste shall not ignite when placed in contact with the non-fire side during the test. Fire-stopping material shall be non-combustible as defined by ASTM E136; and in addition, for insulation materials, melt point shall be a minimum of 1700 degrees F. for 1-hour protection and 1850 degrees F. for 2-hour protection.

G. Fasten sleeves securely in floors, walls, etc. so that they will not become displaced when concrete is poured or when construction is built around them. Take precautions to prevent concrete, plaster, or other materials being forced into the space between pipe and sleeve during construction.

H. Escutcheon plates shall be provided for all exposed un-insulated pipes passing through walls, floors, and ceilings. Plates shall be nickel plated, of the split ring type, of size to match the pipe. Where plates are provided for pipes passing through sleeves, which extend above the floor surface, provide deep recessed plates to conceal pipe sleeves.

2.2 SUPPORTS & ATTACHMENTS

A. Provide all necessary supports and bases required for all equipment, piping and for all other equipment furnished under this contract. Submit shop drawings to the Architect for approval before purchase, fabrication or construction of same.

B. All equipment, unless shown otherwise, shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are not strong enough shall be replaced as directed.

C. Vibration Isolation: All mechanical equipment and piping shall be mounted on vibration isolators/inertia bases to prevent the transmission of vibration and mechanically transmitted sound to the building structure.

1. Vibration isolators shall be selected in accordance with the weight distribution so as to produce reasonably uniform deflections.

2. All isolators and isolation materials shall be of the same manufacturer and shall be certified by the manufacturer.

D. ELECTRIC MOTORS/STARTERS

E. Electric motors and starters shall conform to requirements of the AIEE, NEMA, UL, and NEC and shall be suitable for load duty, voltage, phase, frequency, service and location required.

F. All motors shall be rated at 85% power factor at full rated load. Motors less than 85% power factor shall be corrected to 90% power factor at the factory. All motors shall be rated high efficiency.

G. Starters shall be Cerus International or equal.

1. Enclosed Non-Combination Starter

a) Motor Starter shall be enclosed in a Type 1 or Type 4 UL rated enclosure.

b) Motor Starter shall be rated for NEMA class B motors for AC-3 switching and AC-4 switching.

c) Controls and annunciation shall include Hand- OFF- Auto keypad. LED indication shall include Hand, Off, Auto, Run and Overload. Overload reset shall be available.

d) Control inputs shall include: Auto Wet input, Auto Dry input, Permissive Auto input, Damper Status Input and Override Input. Automatic control inputs shall be capable of accepting a transistorized input without the need for interposing relays. Wet control inputs shall accept AC or DC inputs from 10 to 138VACor DC.

e) Damper control shall be built into the starter to provide 24VAC or 120VAC damper control and monitoring.

f) Override input shall disable the starter from operating in either Hand or Auto mode.

g) Protective Functions

(i) Electronic Overload shall provide phase failure and phase loss protection, stall, and class 1 - 30 selectable overload protection. Phase failure protection shall initiate when phase loss is greater than 70% for 3 seconds or phase unbalance is greater than 50% for more than 5 seconds.

(ii) Cycling fault protection shall be integral to the starter. Cycling fault shall be enabled whenever the starter is cycled more than 1000 times in a one hour period. This feature shall be selectable to be disabled. Cycling fault shall cause overload LED to blink rapidly.

2. Enclosed Combination Starter

a) Enclosed combination starter shall include all of the above descriptions in addition to either a motor circuit protector with lock-out mechanism, a UL 508 breaker, or a fused disconnect with lock-out mechanism.

b) The Motor Circuit protector shall be a UL listed 508 manual motor starter with magnetic trip elements only. The breaker and shall carry a UL 508F rating (up to 100A frame size) which provides for coordinated short circuit rating for use with the motor contactor and provides an interrupting rating for the breaker and contactor combination.

c) Fused disconnect shall be UL 98 suitable for service entrance protection.

d) UL 508 breaker shall include thermal and magnetic trip mechanisms.

H. Disconnects provided by this contractor will be installed by Division 16, with the exception of factory mounted disconnects.

I. Motors smaller than 1/2 HP shall be capacitor-start or split phase type, single phase, 60-hertz alternating current for voltage required. Motors 1/2 HP and larger shall be squirrel-cage induction three phase 60 hertz alternating current for voltage required, unless specifically noted otherwise.

J. Where available, starters and disconnects shall be factory mounted by the unit manufacturer.

2.3 USE OF INSTALLATION

A. The Owners shall have the privilege of using any part of the installation when sufficiently complete, but such use thereof, or partial or final payment shall not be considered as an acceptance of such work in lieu of a written certificate from the Engineer.

2.4 PIPING

A. Equipment Drains and Overflows

1. Copper Tubing: ASTM B88, Type L, hard drawn.

a) Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.

b) Joints: Solder, lead free, 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F (220 to 280 degrees C) or Victaulic grooved joints.

B. Unions, Flanges and Couplings

1. Unions for Pipe 2 Inches (50 mm) and Under:

a) Ferrous Piping: 150 psig (1034 kPa) malleable iron, threaded.

b) Copper Pipe: Bronze, soldered joints.

C. Refrigerant Piping Copper Tubing: ASTM B280, Type ACR hard drawn.

1. Fittings: ASME B16.22 wrought copper.

2. Joints: Braze, AWS A5.8 BCuP silver/phosphorus/copper alloy with melting range 1190 to 1480 degrees F.

3. Provide all valves and accessories required for complete installation.

2.5 VALVES

A. Valve Features

1. General Comply with ASME B31.9 for building services piping, and ASME

2. Valve Design; Valves shall have rising stem, or rising outside screw and yoke stems; except, non-rising stem valves may be used where headroom prevents full extension of rising stems.

3. Pressure and Temperature Ratings As scheduled and required to suit system pressures and temperatures.

4. Sizes unless otherwise indicated, provide valves of same size as upstream pipe size.

5. Operators Provide the following special operator features:

a) Hand wheels fastened to valve stem, for valves other than quarter turn, by brass nut on a square-topped stem.

b) Lever handles on quarter-turn valves 6 inch and smaller, except for plug valves. Provide one wrench for every 10-plug valves, and a one years supply of recommended lubricant or sealant.

c) Chain-wheel operators for valves 2-1/2 inch and larger installed 72 inches or higher above finished floor elevation. Extend chains to an elevation of 5'-0" above finished floor elevation.

d) Gear drive operators on quarter-turn valves 8 inches and larger.

6. Extended Stems where insulation is indicated or specified, provide extended stems arranged to receive insulation.

7. Bypass and Drain Connections: Comply with MSS SP-45 bypass and drain

connections.

8. End Connections: As specified in the individual valves specifications.
9. Threads Comply with ANSI B2.1.
10. Flanges Comply with ANSI B16.1 for cast iron, ANSI B16.5 for steel, and ANSI B16.24 for bronze valves.
11. Solder-Joints Comply with ANSI B16.18.
12. Caution: Where soldered end connections are used, use solders having a melting point below 840 degrees. F for gate, globe, and check valves; below 421 degrees. F for ball valves.
13. Groove-Ended Valves Comply with AWWA C606

B. Gate Valves

1. Gate Valves - 2 Inch and Smaller MSS SP-80; Class 150, body and bonnet of ASTM B 62 cast bronze, threaded or solder ends, solid disc, gland packed, N.A. packing.
2. Gate Valves - 2-1/2 Inch and Larger MSS SP-70; Class 125 cast iron bodies conforming to ASTM A 126 (Body and Bonnet). Bronze trim, flanged ends, N.A. packing.

C. Ball Valves

1. Ball Valves – 1 Inch and Smaller Rated for 150 psi saturated steam pressure, 600 psi WOG pressure; 2-piece construction, bronze body conforming to ASTM B 62, standard (or regular) port, stainless steel ball, replaceable “Teflon” or “TFE” seats and seals, blowout proof stem, and vinyl-covered steel handle. Threaded ends for heating hot water and low-pressure steam.
2. Ball Valves - 1-1/4 Inch to 2 Inch Rated for 150 psi saturated steam pressure, 600 psi WOG pressure; 3-piece construction, bronze body conforming to ASTM B 62, conventional port, stainless steel ball, replaceable "Teflon" or "TFE" seats and seals, blowout proof stem, and vinyl-covered steel handle. Threaded ends for heating hot water and low-pressure steam.
3. Ball Valves-1/2 inch through 2inch Rated for up to 600 psi WOG, brass body, standard port, threaded ends, 2-piece, chrome-plated brass ball, TFE seats. Victaulic Style 722.
4. Ball Valves-1-1/2 inch through 6 inch. Rated for up to 1000 psi. ductile iron body, standard port, grooved ends, 2-piece, chrome-plated carbon steel ball, TFE seats. Victaulic Style 726.

D. Globe Valves

1. Globe Valves - 2 Inch and Smaller MSS SP-80; Class 150, body and union bonnet of ASTM B 62 bronze, gland packed, N.A. packing. Bronze trim, composition disc.
2. Globe Valves - 2-1/2 Inch and Larger MSS SP-85; Class 125 body, bronze trim, with body and bonnet conforming to ASTM A 126, Class B; cast iron, flanged ends, with N.A. packing.

2.6 PIPING ACCESSORIES

A. Dielectric Unions: Unions comprising steel female pipe thread end and copper solder-joint end conforming to dimensional, strength and pressure requirements of Fed. Spec. WW-U-531, Class 1. Steel parts shall be galvanized or plated. Union shall have water-impervious insulation barrier capable of limiting galvanic current to 1% of the short-circuit current in a corresponding bimetallic joint. When dry, it shall also be able to withstand a 600-volt breakdown test.

   1. Dielectric Waterways: Electroplated steel or ductile-iron nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig maximum working pressure at 230 deg F. Victaulic Style 47.

B. Sleeves: Provide where piping passes through masonry or concrete walls, floors, roofs and partitions. Sleeves shall be placed during construction. Sleeves in outside walls below and above grade, in floor, or in roof slabs, shall be standard weight zinc coated steel pipe. Sleeves in partitions shall be zinc coated sheet steel having a nominal weight of not less than 0.90 pound per square foot. Space between piping and the sleeve shall be not less than 0.25 inch. Sleeves shall be of sufficient length to pass through entire thickness of walls, partitions or slabs.

2.7 UNDERGROUND REFRIGERANT PIPING CONDUIT

A. The mechanical work required in conjunction with underground conduit shall include providing all conduits.

B. Conduits for underground banks shall be:

   1. Trade diameter size as indicated.
   2. Polyvinyl chloride Schedule 40 (approved for encased burial) duct.
   3. Comply with NEMA TC 2; Schedule 40 PVC, or as indicated on plans. Fittings and Conduit Bodies shall comply with NEMA TC 3. Acceptable manufacturers are Carlon or approved equal.

C. Install conduit in such a manner as to provide a minimum cover of 30 inches after final grading except the cover may be reduced to a minimum of 18 inches to:

   1. Tie into existing work.
   2. Pass over other underground utilities.
   3. Pass over underground obstructions.
   4. Assist in the avoidance of low points.

D. Increase the minimum cover where required by field conditions.

E. Bends in conduit shall have minimum radius of 36”.

F. Install conduit so that adjacent joints are staggered at least 6 inches from one another.

G. Offsets to accommodate field conditions shall be accomplished with two (2) bends of not more than ten (10) degrees each.

H. Plug both ends of all conduit stubs.

I. Backfill trenches as required and under provisions of Division 2. Interface installation of underground warning tape with backfilling specified in Division 2. Install warning tape 6 inches below finished surface.

J. Provide a continuous nylon warning tape above each full length of conduit 12 inches below grade.

K. After conduit has been installed and backfilled, clear each conduit of all obstructions and foreign matter by pulling a flexible mandrel (12" minimum length and a diameter 1/4" less than that of the conduit) and brush through it. In the event that obstructions are encountered in any conduit which will not permit the mandrel to pass, remove and replace the blocked section. Include in the mechanical work all excavation, backfilling, repair of concrete encasement and restoration of surface at grade involved in the conduit replacement.

2.8 PIPING INSTALLATION

A. Piping shall be inspected, tested and approved before being buried, covered or concealed. Horizontal piping shall be pitched with a minimum grade of one inch in 50 feet. Fittings shall be provided for changes in direction of piping, and for all connections. Fuel supply piping shall allow for ample tank movement and pipe expansion.

B. Install piping free from traps and drain toward tank.

C. Pipe Sleeves: Firmly pack space between the pipe or tubing, and sleeve with oakum and caulk on both ends of sleeve with elastic cement.

D. Unions, Flanges and Victaulic Couplings: Place unions, flanges or Victaulic couplings where necessary to permit easy disconnection of piping and apparatus. Each connection having a screw end valve shall have a union.

E. Valves: Install valves in positions accessible for operation and repair. Install check valve and an isolation valve on suction line of each fuel oil storage tank.

F. Field Testing: Upon completion and before final acceptance of the work, each system shall be tested as in service to demonstrate conformance with the contract requirements and in accordance with the requirements of ANSI B31.3 and NFPA 30.

2.9 PIPING INSULATION

A. Insulation

1. Low Temperature Fluid applications: Provide insulation with integral wick material. Product shall include a factory applied integral vapor retarder extending under the evaporator area of the wick and covering not less than 98% of the circumference of the product. Exposed evaporator area shall be not less than 0.1 sq. ft./linear ft. of product.

2. Refrigerant Piping: Flexible closed cell insulation.

B. Compliance: Insulation thickness, conductivity and installation shall comply with local Mechanical and Energy Codes.

	NOMINAL PIPE DIAMETER	
Fluid	≤1.5"	>1.5"
Condensate Drain or Refrigerant	1 1/2"	1 1/2"

C. Fittings: Factory precut insulation inserts, thickness to be same as adjacent. Enclose in premolded, PVC fitting covers.

1. Low Temperature Applications: Fittings and valves shall be wrapped continuously with wicking material prior to installing insulation to ensure a continuous path for removal of condensation.

D. Jackets:

1. Interior: Factory applied, all service jacket of white Kraft bonded to aluminum foil reinforced with fiberglass yarn and suitable for painting. Longitudinal and butt joints shall be made with factory applied pressure sensitive material.
2. Exterior/Exposed (Low Temperature): Field applied, 20 mil, PVC sheet material.
3. Exterior/Exposed (High Temperature): Field applied, Aluminum sheet material.
4. All jackets exposed to the weather shall be reflective, UV resistant and sealed watertight.

E. Preparation

1. Install materials after piping has been tested and approved.

F. Installation

1. Install materials in strict accordance with manufacturer's instructions.
2. Continue all insulation through penetrations.
3. In piping exposed to view, locate insulation and cover seams in least visible locations.

PART 3: EXECUTION

3.1 OPERATING INSTRUCTIONS

A. Instruction to the Owner's Personnel - After completion of all work and all tests and at such times as designated by the Architect, provide the necessary skilled personnel to operate the entire installation until receipt of owners acceptance.

B. During the operating period, instruct the Owner's representative in the complete operation, adjustment, and maintenance of the entire installation.

C. Give at least forty-eight (48) hours advance notice to the Owner to coordinate scheduling of this instructional period.

D. Furnish to the Architect five (5) complete bound sets of typewritten or blueprinted instruction manuals for operating and maintaining all systems and equipment included in the contract. All instruction manuals shall be submitted in draft, for approval, prior to final issue. Manufacturer's advertising literature or catalogs will not be acceptable for operating and maintenance instructions.

E. The above-mentioned instructions shall include the maintenance schedule for the principal items of equipment furnished under this contract.

3.2 MANUFACTURER'S RECOMMENDATIONS:

A. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Architect prior to installation. Installation of the

item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

3.3 TESTING, ADJUSTING, AND STARTING UP

A. Testing: All work must be proved satisfactory. The tests herein specified shall be applied in the presence of, and to the satisfaction of, the Architect before the work is covered, concealed or made inaccessible to testing, repair, correction or replacement. Accommodate the testing operation to the progress of the project as a whole. Correct all defects appearing under test and repeat the tests until all parts of the work have been successfully tested. Apply the specific tests herein described. Present all work for acceptance in clean condition, properly adjusted and in good working order; for instance, all machinery must be quiet, well balanced, and must be in place and reading accurately. All systems, equipment, controls, and devices in this work shall be tested in operation and must prove for their purposes in the judgment of the Architect or his authorized representative. All internal surfaces of all lines and equipment shall be blown or flushed clean. Where pressure tests are specified, the apparatus shall be clean before the tests are applied. Contractor shall provide adequate protection of piping systems to prevent vandalism and/or accidental damage, blockage, etc., that will hinder or prevent proper operation of the finished systems.

1. Test equipment and systems, which normally operate during seasons of the year during the appropriate season. Perform tests on individual equipment, systems and their controls. Whenever the equipment or system under test is interrelated with and depends upon the operation of other equipment, systems and controls for proper operation, function, and performance; the latter shall be operated simultaneously with the equipment of system being tested.

B. Adjusting, Balancing and Starting Up

1. Flush clean all systems prior to starting up the system. Any damages to the building or system components caused by failure to clean the systems properly shall be corrected to the satisfaction of the Architect or his authorized representative at no additional cost to the Owner.

2. Run motor-driven equipment continuously for at least two hours in the presence of the Architect. Correct all defects of noise, vibration, alignment and balance. Replace all motors, which overheat or are noisy.

3.4 SEQUENCE OF OPERATIONS

A. Sequence of Operations: This is a performance-based specification intended to convey the control intent of the various systems. The contractor shall provide detailed shop drawings including P&ID diagrams, equipment lists and finalized sequences for review by the Engineer prior to installation. Any questions concerning specific details shall be referred to the

B. Equipment and Wiring: This contractor shall provide all control equipment, and wiring (regardless of voltage) to accomplish the sequence of operations as detailed below.

C. Safety Controls: This contractor shall provide all safety controls required to protect the building and all controlled equipment from damage as well as those controls necessary to signal abnormal operation or malfunction of equipment. These shall include but not be limited to high limits, low limits, freezestats, flow switches, interlocks and relays.

D. Energy Efficiency: All controls and sequences shall be configured to provide maximum energy efficiency while maintaining occupant comfort.

E. Exhaust Fans:

1. Factory furnished controls shall be installed by this contractor to operate the fans.

F. Ductless Split System Heat Pumps

1. System controls shall be furnished with the equipment and installed by this contractor.

END OF SECTION

SECTION 26000
ELECTRICAL

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

B. Examine all drawings and all other sections of the specifications for requirements therein affecting the work of this trade.

C. These documents are not intended to be complete construction documents. These documents, do, however, show the systems required and approximately where the larger equipment is to be located. This contractor shall include allowances in his estimates to fully complete the system including all interconnecting, coordination and installation details and components and extending the system into and throughout all spaces. This Contractor shall also include allowances for startup and for making the systems fully operational, and for scope and design contingencies. Future changes in price for items not shown on these drawings will not be allowed if the system itself is shown on these Drawings.

D. Give notices, file plans, obtain permits and licenses, pay fees and back-charges, and obtain necessary approvals from authorities that have jurisdiction as required to perform work in accordance with all legal requirements and with Specifications, Drawings, Addenda and Change Orders, all of which are part of Contract Documents.

E. Refer to Division 02 sections “Environmental”, “Division 31 Section Site Clearing”, “Structure Demolition”, and “Selective Demolition” for all the haz mat, site utilities, cut/cap/make safe/abandon issues with site utilities, and entire building demolition.

F. Refer to Division 28 section “Intrusion Detection”.

1.2 SUMMARY

A. This Section specifies the basic requirements for electrical installations and includes requirements common to more than one section of Division 260000. It expands and supplements the requirements specified in sections of Division 1.

B. These documents have been prepared with the intention that they call for finished, tested work, in full operating condition and complete with necessary accessories.

C. The contract drawings are generally diagrammatic and convey the scope of work and general arrangement of apparatus and equipment. The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined at the project and shall have the approval of the

Architect/Engineer before being installed. The Contractor shall follow the drawings in laying out work and shall check drawings of the other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. If directed by the General Contractor, Engineer and/or Architect, the Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

D. These contract documents are complementary. What is called for by one shall be as binding as if called for by all. Materials or work described in words, which have well-known technical, or trade meaning shall be held to refer to such recognized standards. Incidental devices and accessories needed for complete, operational systems shall be provided even though they may not be indicated or identified in the documents.

E. If apparatus have been omitted, notify the Architects/Engineers of such belief. It is understood that bidder has included all required items and work in his bid, and will not if bid is successful, claim extra compensation for furnishing a complete and satisfactory system. If a particular item is called for or specified more than once in these contract documents, the higher grade shall be considered specified.

F. Should it appear that the character of the work is not sufficiently explained in these specifications or on the drawings, apply to the A/E for further information. Conform to the A/E's decision and directions as shall become part of these contract documents. The A/E reserves the right to be sole interpreter of the drawings and specifications, and all decisions shall be conclusive, final and binding on the parties.

G. Materials called for in these documents shall be new, unused equipment and of the latest recognized standards.

1.4 OUTLINE SCOPE OF WORK

A. The work under this contract, without limiting the generality thereof, includes all materials, labor, equipment, services, and transportation, unless otherwise specified, necessary to complete all systems of electrical wiring and equipment required by the drawings and/or as specified herein. It is the intent of this section and accompanying electrical drawings that these systems be furnished complete in every respect. The Electrical Contractor shall furnish all wiring, equipment and labor needed for a complete operating installation.

B. Each apartment shall have the following amenities:
   1. Range
   2. Refrigerator
   3. Dishwasher Connection
   4. Hood Exhaust
   5. Electric Dryer

C. Furnish all labor and materials necessary for the complete installation of electrical work

as herein specified. Such work includes, but is not limited to, the following:

1 Complete feeder system to all power panels and mechanical & plumbing equipment.
2 Branch circuit panels for power and lighting.
3 Complete branch circuit wiring system for all lighting, motors receptacles, junction boxes and similar uses.
4 Lighting fixtures, dimming switches, wall switches, receptacles and similar items.
5 Local Fire alarm devices.
6 System fire alarm system (_____ only)
7 Doorbell system
8 Utility company coordination, equipment & work.
9 Telephone service, cable and wiring with devices.
10 Security Alarms
11 Connections for commercial washers & dryers.

D. The Electrical Contractor shall fully indemnify the Owner against any damages, removals and alteration work. This is in addition to the requirements of the General Conditions of the Specifications.

1.6 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in Divisions 2 through 230000 for rough-in requirements.

C. Coordinate all devices & outlets above, below or on casework with Architect & Owner in order to position at the proper height and proper location.

1.7 SURVEYS AND MEASUREMENTS

A. Base measurements, both horizontal and vertical, on established bench marks. Work shall agree with these established lines and levels. Verify measurements at site and check the corrections of same as related to the work.

B. Should the Contractor discover any discrepancy between actual measurements and those indicated, which prevents following good practice or the intent of the drawings and specifications, he shall notify the A/E.

1.8 EXAMINATION OF SITE

A. Prior to submitting bid, visit the site where the work is to be performed and the materials are to be delivered. Failure in this respect shall not excuse the Contractor from his

obligation to supply and install the work in accordance with the plans and specifications and under all conditions, as they exist.

B. By submitting a bid, this Contractor warrants that all specification sections and drawings showing equipment for plumbing, heating, ventilation, air conditioning, electrical, and architectural, have been examined and is familiar with the conditions and extent of work affecting this contract.

1.9 EQUIPMENT AND MATERIALS

A. All equipment and materials for permanent installation shall be the products of recognized manufacturer's and shall be new, unless noted for re-use, without damaged, functional or aesthetic components.

B. New equipment and materials shall:

1. Be Underwriters Laboratories, Inc. (UL) labeled and/or listed where specifically called for, or where normally subject to such UL labeling and/or listing services.

2. Be without blemish or defect.

3. Be in accordance with the latest applicable NEMA standards.

4. Be products, which will meet with the acceptance of the agency inspecting the electrical work. Where such acceptance is contingent upon having the products examined, tested and certified by UL or other recognized testing laboratory, the product shall be so examined, tested and certified.

C. For items of equipment, which are to be installed but not purchased as part of the electrical work, the electrical work shall include:

1. The coordination of their delivery.

2. Their unloading from delivery trucks driven in to any point on the property line at grade level.

3. Their safe handling and field storage up to the time of permanent placement in the project.

4. The correction of any damage, defacement or corrosion to which they may have been subjected.

5. Their field make-up and internal wiring as may be necessary for their proper operation.

6. Their mounting in place, including the purchase and installation of all dunnage, supporting members and fastenings necessary to adapt them to architectural and structural conditions.

D. Items of equipment, which are to be installed but not purchased as part of the electrical work, shall be carefully examined upon delivery to the project. Claims that any of these items have been received in such condition that their installation will require procedures beyond the reasonable scope of the electric work will be considered only if presented in writing within one week of the date of delivery to the project of the items in question. The electric work includes all procedures, regardless of how extensive, necessary to put into satisfactory operation, all items for which no claims have been submitted as outlined above.

1.10 ELECTRICAL INSTALLATIONS

A. All materials and labor called for, specified in Division 230000 of the specifications, and or shown on the electrical drawings furnished under this contract shall be provided under Division 26 unless called for otherwise in the Division 260000 documents. The word "provide" as used in the Division 26 documents, shall mean to furnish, install, connect up, complete with all accessories ready for operation and warranted.

B. Coordinate electrical equipment and materials installation with other building components. Fully coordinate work with that of other trades. Furnish information in writing that is needed for the coordination of clearances, etc., with the work of others, and such information shall be given in a timely fashion so as not to impede the progress of two or more trades. Confer and resolve the conflict immediately. If so directed by the A/E, prepare composite drawings to resolve any space or clearance conflict.

C. Verify all dimensions by field measurements.

D. Arrange for chases, slots, and openings in other building components to allow for electrical installations.

E. Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed.

F. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing-in the building.

G. Coordinate the cutting and patching of building components to accommodate the installation of electrical equipment and materials.

H. Where mounting heights are not detailed or dimensioned, the exact location shall be determined by the A/E, install electrical services and overhead equipment to provide the code and/or utility requirements.

I. Install electrical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

J. Coordinate the installation of electrical materials and equipment above ceilings with suspension systems, mechanical equipment and systems, and structural components.

K. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

L. Attention is directed to areas and items indicated on the drawings by the notations "HOLD", "N.I.C.", "BY OTHERS" and words of similar intent. The work indicated in these areas is shown for information and continuity only. Work or items furnished and installed in these areas solely for the convenience of this Contractor or others, without prior written approval of the Owner, shall be removed at the option of the Owner and at the Contractor's expense.

M. Provide all required staging and scaffolding for all the work under this section.

1.11 ALTERATION WORK

A. Maintain continuity of service in areas where occupancy is to be maintained during alterations. If it becomes necessary to disconnect or interrupt service, obtain written consent of the Owner, and only disconnect service at the convenience of, and with the consent of the Owner. A copy of the written request for a shutdown shall be forwarded to the A/E.

1.12 CUTTING AND PATCHING

A. Cutting and patching of electrical equipment, components, and materials specified under Division 230000 (conduit, sleeves, equipment, etc.) shall be performed by Electrical Contractor.

B. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 Section: "Cutting and Patching" for definitions, requirements, and procedures.

C. Cutting and patching of existing structures (thru walls, floors, ceilings, etc.) to accommodate equipment, components, and materials of all Contractors, including Mechanical and Electrical Contractors, shall be performed by General Contractor and/or his designated Subcontractor.

D. Cutting and patching of new structures (thru walls, floors, ceilings, etc.) to accommodate installation of ill-timed work or removal and replacement of defective work or work not conforming to requirements of Contract Documents, shall be performed by General

Contractor and/or his designated Subcontractor and costs shall be back charged to appropriate trade Contractor.

E. Do not endanger or damage installed work through procedures and processes of cutting and patching.

F. Arrange for repairs required to restore other work, because of damage caused as a result of electrical installations.

G. Arrange to have ducts, raceways, conduit, panelboards, boxes, and such other pertinent parts, set in place ahead of construction work so that they will be built-in with structures and eliminate need for cutting and patching. Failure to conform to this paragraph will require that this Contractor perform any cutting and patching required for his work at his expense. Cutting shall be neatly finished to match adjoining work in a manner acceptable to the A/E. Cutting and patching shall not affect the fire rating of walls or structural parts. Cutting and patching required to correct work, due to error or negligence of the Contractor, or to defects in his material or workmanship, shall be corrected at no additional cost to the Owner. Patching shall meet or exceed quality of adjacent surfaces. Cutting must be accomplished as not to weaken adjacent structural members and must be approved by the Structural Engineer before proceeding.

H. Perform cutting, fitting, and patching of electrical equipment and material required to:

1. Uncover work to provide for installation of ill-timed work.
2. Remove and replace defective work.
3. Remove and replace work not conforming to requirements of the contract documents.
4. Remove samples of installed work as specified for testing.
5. Install equipment and materials in existing structures.
6. Upon written instructions from the A/E, uncover and restore work to provide for A/E observation of concealed work.

I. Cut, remove and legally dispose of selected electrical equipment, components and materials as indicated, including, but not limited to, removal of electrical items indicated to be removed and items made obsolete by the work.

J. Protect the structure, furnishing, finishes, and adjacent materials not indicated or scheduled to be removed. Protect the electrical work and the work of others in a manner best suited to the particular case. Correct any damage done to any work at no additional cost.

K. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

L. Locate, identify, and protect electrical services passing through areas that are to under go remodeling or demolition. Electrical services serving other areas required to be

maintained, and transit services must be interrupted, provide temporary services for the affected areas and notify the Owner prior to changeover.

1.13 SUBMITTALS

A. Within fifteen (15) days after the date of notice to proceed and before purchasing any materials or equipment, submit for approval a complete list, Electronic Submittals per 013100, of all materials to be incorporated in the work.

B. Shop drawings/manufacturer's cuts are required for:

1. Conduit, Wire & Cable.
2. Lighting Fixtures.
3. Switchboards & Panelboards.
4. Disconnect Switches.
5. Wiring Devices and Plates.
6. Fire Alarm System.
7. Fire Stopping Materials.
8. Seismic Restraint Components.

C. After the list has been processed, submit complete shop drawings of all equipment. These shop drawings submittals shall be submitted within thirty days after the processing date of the original submittal.

D. All submittals shall be complete and shall be in three-ring loose-leaf binders. No consideration will be given to partial submittals except with prior approval. No consideration will be given to faxed submittals.

E. Explanation of Shop Drawing Stamp:

1. Approved: indicates that we have not found any reason why this item should not be acceptable within the intent of the documents.

2. Approved with Comments: indicates that we have found questionable components which, if corrected or otherwise explained, make the product acceptable.

3. Resubmit for Final Review: indicates that this item should be resubmitted for approval before further processing.

4. Does Not Conform: indicates that the item will not meet the intent of the Contract.

F. No shop drawing stamp or note shall constitute an order to fabricate or ship. Such notification can only be performed by the Project Manager for construction, the Contractor scheduling his own work, or the Owner.

G. Submittal of shop drawings, product data, will be reviewed only when submitted by the Contractor. Data submitted from Sub-contractors and material suppliers directly to the A/E will not be processed.

H. If shop drawing is not in compliance after two submissions, a third submission for the same manufacturer will not be considered for review.

I. Check shop drawings and other submittals to assure compliance with contract documents before submittal to A/E.

J. Review of shop drawings is final and no further changes shall be considered without written application. Shop drawing review does not apply to quantities, dimensions, nor relieve this Contractor of his responsibility for furnishing materials or performing his work in full compliance with these contract drawings and specifications. Review of these shop drawings shall not be considered a guarantee of the measurements of this building or the conditions encountered.

K. General requirements for the substitution of equipment and submittal of shop drawings as follows. If apparatus, systems or materials are substituted for those specified, and such substitution necessitates changes in, or additional connections, wiring, supports, or construction, it shall be provided by this Contractor at no additional cost to the Owner. This Contractor shall assume all cost and entire responsibility thereof. The approval of substituted equipment does not relieve the contractor of his/her responsibility of shop drawing errors related to details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the Specifications, and/or job conditions as they exist. It is the contractor's responsibility to submit only those items that meet the specified apparatus, systems and material. Should any non-conformance code items be installed, they shall be replaced by this Contractor at no additional cost to the Owner. The construction means and methods used in the project shall be reviewed and approved through the local building department or a deputy inspector to insure compliance with the current codes, project specifications and general building practices.

A. Coordination drawings shall be initiated by this contractor. It this contractor’s responsibility for preparation of project coordination drawings showing the installation of all equipment, piping, ducts and accessories to be provided under Section 230000 of the Specifications. These drawings shall be prepared at not less than 1/4 in. = 1 ft. scale, and shall show building room layouts, structural elements, ductwork and lighting layouts of function. Drawings shall indicate horizontal and vertical dimensions, to avoid interference with structural framing, ceilings, partitions, and other services. A reproducible copy of each drawing prepared shall then be submitted to each Contractor working under Sections 210000, 220000 and 260000, who shall be responsible to coordinate his equipment and systems and shall show these on the drawings submitted. After each Contractor has fulfilled his obligation, he shall return the drawings to the HVAC Contractor. After each drawing has been coordinated between trades, and appropriate revisions made, each trade shall sign each drawing, indicating acceptance of the installation. The HVAC Contractor shall then print the coordination original and these prints submitted through the General Contractor to the architect for review and comment,

similar to shop drawings. Comments made on these drawings shall result in a correction and re-submittal of the drawings.

1.14 PRODUCT OPTIONS AND SUBSTITUTIONS

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. If materials of equipment are substituted for specified items that alter the systems shown or its physical characteristics, or which have different operating characteristics, clearly note the alterations or differences and call it to the attention of the A/E. Under no circumstances shall substitutions be made unless identical material or equipment has been successfully operated for at least three consecutive years.

C. All substitution made by the Contractor shall require the Contractor to fully coordinate the substitution with other trades. The Contractor must make any modifications required by the substitution at no additional cost to the Owner. In addition the Contractor must notify the A/E of any changes required and obtain approval for the changes. The review of the shop drawings by the A/E shall not relieve the Contractor from his responsibility as set forth in this specification.

1.15 NAMEPLATE DATA

A. Provide permanent operational data nameplate on each item of power operated equipment, indicating manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data. Locate nameplates in a readily accessible location.

1.16 DELIVERY, STORAGE AND HANDLING

A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.

B. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage. All devices shall be stored in a locked room. Assume responsibility for the devices until the date of final inspection.

C. Coordinate deliveries of electrical materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.

1.17 RECORD DOCUMENTS

A. As work progresses and for the duration of Contract, maintain a complete and separate set of prints of Contract Drawings at job site at all times. Record work completed and all changes from original Contract Drawings clearly and accurately including work installed as a modification or addition to the original design. Work shall be updated on a weekly basis and shall be made available for review by Architect. Failure to perform this work shall be reason for withholding requisition payments. In addition, take photographs of all concealed equipment in gypsum board ceilings, shafts, and other concealed, inaccessible work. At completion of work, make copies of photographs with written explanation on back. These shall become part of Record Documents.

B. At completion of work prepare a complete set of Record Drawings in CAD format & paper copy, showing all systems as actually installed, including all fire alarm and electrical circuitry. The design tracings will be made available for the Electrical Contractor's copying, at his expense, onto CAD reproducibles to serve as backgrounds for the drawings. The quantity of design tracings which are made available shall in no way be interpreted as setting a limit to the number of drawings necessary to show the required information. The Electrical Contractor's professional draftperson shall transfer changes to CAD files; submit CAD files and three (3) sets of prints to Architect for comments as to compliance with this section.

C. The Architect will not certify the accuracy of the Record Drawings. This is the sole responsibility of the Electrical Contractor.

D. This trade shall submit the record set for approval by the Fire and Building Departments in a form acceptable to the departments, when required by the jurisdiction.

E. Drawings shall show record condition of details, sections, riser diagrams, control changes and corrections to schedules. Schedules shall show actual manufacturer and make and model numbers of final equipment installation.

F. Refer to Division 01 section "Project Record Documents" for additional information and requirement's.

1.18 WARRANTIES

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. All work and equipment furnished under this Section shall be guaranteed free from defects in workmanship or materials for a period of one (1) year, unless specifically noted otherwise for a particular system, from the date of final acceptance of the systems as set forth in this Contract. The Subcontractor shall replace any defective work developing during this period, unless such defects are clearly the result of misuse of equipment by persons not under the control of the Subcontractor, without cost to the Owner. Where such defective work results in damage to work of other Sections, all such work shall be restored to its original condition by mechanics skilled in the affected trade,

at the expense of the Subcontractor. The Subcontractor shall submit a separate written guarantee stipulating the aforesaid conditions.

C. Prior to or at the time of Substantial Completion for the work and during administrative close-out of the project, submit one (1) copy of all specified warranties and guarantees to the Architect for review, approval and subsequent transmittal to the Owner.

D. Warranties and guarantees, including those specified in excess of the general one (1) year guarantee, shall be complete for all specific materials, systems, sub-systems, equipment, appliances and products specified and required by the Contract Document.

E. Warranties and guarantees shall clearly define what is to be guaranteed; the extent, terms, conditions, time and effective dates.

F. Copies of the same warranties and guarantees shall be included in the “Operating and Maintenance Manual” as specified herein.

1.19 CLEANING

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. Upon completion of work, the Contractor shall clean, polish and leave bright, fixtures and lamps, and shall remove dust, dirt, debris and loose plaster from panelboards, controls, and switchboards. Unused openings in pull boxes, junction boxes, equipment and raceways shall be capped or closed by an approved means. Replace all inoperative lamps.

1.20 DEFINITION OF TERMS

A. "This Contractor" or "E.C." specifically means, the Electrical Contractor working under this section of the specifications.

B. "Concealed" means hidden, in chases, furred spaces, walls, above ceilings or enclosed in construction.

C. "Exposed" means visible in sight or not installed "concealed" as defined above.

D. "Approved Equal" means any equipment or material which is approved by the Engineer and equal in quality, durability, appearance, strength, design and performance to the equipment or material originally specified.

E. "Conduit" shall mean all conduit including fittings, joints, hangers and supports.

F. "Furnish" shall mean to purchase and deliver to the project site complete with every necessary appurtenance and support, all as part of the electrical work.

G. "Install" shall mean to perform every operation necessary to establish secure mounting and correct operation at the proper location in the project, all as part of the electrical work.

H. "Provide" shall mean to furnish and install.

1.21 QUALITY ASSURANCE

A. Obtain services of manufacturer's representatives of electrical equipment, during erection and construction of their respective equipment to insure proper installation of same.

B. A letter is required from each system manufacturer's representative certifying to the A/E that requirements have been checked and are properly installed and operating.

1.22 PERFORMANCE TESTS - ELECTRICAL

A. Test and adjust the electrical systems and equipment during the progress of the work.

B. Upon completion of work and after preliminary tests to assure that all systems are complete and in proper working order, arrange with the A/E to conduct performance tests of the electrical systems. These tests may be witnessed by the A/E prior to acceptance of systems and shall be arranged for the purpose of demonstrating compliance with contract documents. During this period, visually inspect all electrical equipment. Lighting fixtures shall be tested with specified lamps in place for not less than six (6) hours. Check voltages to assure that all transformer taps are properly set.

C. General operating tests shall be performed under as near design conditions as possible, for a period of not less than one (1) hour for each system, and shall demonstrate that all equipment is functioning in accordance with specifications. Furnish all instruments, ladders, test equipment and personnel required for tests. Any equipment or systems found by test to be deficient or unsatisfactory shall be replaced and tests repeated as often as necessary to assure compliance with contract documents.

D. Test all feeders, sub-feeders and all branch wiring for amperage, voltage, phase balance, phase sequence of A,B,C and insulation resistance, then submit the results of this test to the A/E neatly typed in triplicate for review. This test may be conducted at any time up to, through and including, the guarantee period if requested by the A/E, at no additional cost to the Owner.

E. Phase balance the complete electrical system, phase balance all panels as near as loads will permit under normal working conditions.

F. Test all ground conductors for current flow, as near design operating conditions as possible. If any measured current exceeds one (1) ampere, determine and correct the cause.

1.23 SEISMIC RESTRAINT

A. General

1. All equipment, conduit and pull boxes shall be adequately restrained to resist seismic forces. Restraint devices shall be designed and selected to meet seismic requirements as defined in the latest issue of the BOCA National Building Code in accordance with Seismic Zone 2A with a minimum restraint capability of 4.

2. Anchor bolt calculators, signed and stamped by a registered professional engineer, shall be submitted showing adequacy of the bolt sizing and type. Stamped calculations shall also be furnished for anchors on restraint devices, cables, isolators and rigidly mounted equipment.

B. Products

1. Type SWSR - A unitized adjustable open spring isolator and a welded steel housing, designed to resist seismic forces in all directions. Restraint surfaces forces in all directions. Restraint surfaces which engage under seismic motion shall be cushioned with a resilient elastomer, neoprene or equal, to protect equipment. Restraints shall allow a maximum of 1/4" movement before engaging and shall allow for the spring to be changed if required.

   Isolator shall be a stable spring with a minimum Ky/Ky of 1.0 and the spring shall be isolated from the housing by an internal elastomeric pad on its base for sound absorption. Nuts and bolts shall be zinc-electroplated to prevent corrosion. Bolting equipment to isolator with bolts smaller than main adjusting bolt will not be allowed.

   Baseplate shall have adequate means of bolting to the structure. IF elastomeric pad for sound absorption is on baseplate of housing, anchor bolts are to be isolated with elastomeric grommets.

2. Type CTER - A unitized adjustable, stable open spring isolator and seismic restraint housing which serves as a blocking device during equipment installation. The spring package shall be isolated from the housing by an internal elastomeric pad for sound absorption. Nuts, adjusting bolts and washers shall be zinc-electroplated to prevent corrosion.

   The spring assembly shall be removable and shall fit within a welded steel enclosure consisting of a top plate and rigid lower housing. Isolated seismic restraint bolts shall connect top plate to lower housing to resist seismic forces in all directions. Surfaces which engage under seismic elastomer, neoprene or equal, to protect equipment. Top plate shall have adequate means for fastening to the equipment, and baseplate shall have adequate means for bolting to structure. If elastomeric pad for sound absorption is on baseplate of housing, anchor bolts are to be isolated with grommets.

3. Type ER - A restraint assembly for floor mounted equipment consisting of welded steel interlocking assemblies welded or bolted securely to the equipment or the equipment bases and to the supporting structure. Restraint assembly surfaces, which engage under seismic motion, shall be lined with a resilient elastomer, neoprene or equal, to protection equipment. Restraints shall be field adjustable and be positioned for 1/4" clearance both vertically and horizontally or clearance as required to prevent interference during normal operation.

   Restraint assembly shall have minimum rating of 3 times the catalog rating as certified by independent laboratory test.

4. Cables - A restraint assembly for suspended equipment, conduit or pull boxes consisting of galvanized steel aircraft cable attached to steel thimbles with neoprene sleeve (isolated piping only), brackets and bolts all specifically designed for cable service and securely fastened to the equipment, or the equipment base and the building structure.

   Cables shall be sized for a force as listed on SSR-9108-1 for buildings for appropriate zone with minimum safety factor of 2 based upon independent test data. Cables shall be installed to prevent excessive seismic motion and so arranged that they do not engage during normal operation.

C. Application

1. Isolated Equipment

   a. Floor mounted isolated equipment which weights over 300 pounds including base shall be protected with type SWSR or type CTER unitized isolator and restraint or with separate type ER restraints (minimum of 4) and non-seismic isolators. For equipment with high center of gravity, additional cable restraints shall be furnished, as required, to limit forces and motion caused by rocking.

   b. All suspended isolated equipment and vessels shall be protected with cable restraints. Cables shall be installed to prevent excessive seismic motion and so arranged that they do not engage during normal operation.

2. Isolated Piping

   a. All isolated conduit 2-1/2" and over shall be protected in all planes by cable restraints, designed to accommodate thermal movement as well as restrain seismic motion. Control rods should be used on flexible connectors in system. Pull or junction boxes connected to isolated conduit shall be restrained same as the conduit. Locations shall be as determined by the isolator supplier and shall include, but not be limited to:

1) At all drops to equipment connections.
2) At changes in direction of conduit.
3) At horizontal runs of conduit, not to exceed the following spacing as presented in Amber/Booth, design criteria 3. Isolated Equipment.

b. Isolated equipment 6 square feet and larger in cross sectional area or 28" diameter and larger shall be protected in all planes by cable restraints. Locations shall be determined by the isolator supplier and shall include but not be limited to:

1) At all equipment connections.
2) At all equipment runs and equipment run ends transverse bracing and longitudinal bracing not to exceed previously specified spacing).

c. Isolated equipment under 4 square feet in cross sectional area or under 26" diameter need not be additionally restrained.

3. Rigidly Mounted Equipment - Floor mounted and suspended equipment and vessels which weight over 300lbs shall be protected by properly sized anchor bolts or hanger rods and bracing. The need for restraints in addition to anchor bolts shall be determined by and, if required, furnished by the supplier of the seismic restrains of the isolated equipment.

4. Rigidly Mounted Conduit - All uninsolated conduit 2-1/2" inside diameter and larger shall be protected in accordance with the Amber/Booth Guidelines. Conduit suspended by hangers 12" or less in length from the top of the conduit to the bottom of the support for the hanger need not be restrained.

5. Rigidly Mounted Pull or Junction Boxes - All pull or junction boxes shall be protected as for rigidly mounted conduit.

D. Installation

1. All seismic restrains are to be securely anchored or fastened to the equipment and supporting structure in accordance with the approved submittal data.

2. Operating clearances are to be adjusted so that restraints do not interfere during normal operation of the equipment.

3. Upon completion of the installation, the supplier of the seismic restrains shall inspect and certify in writing to the architect that restraints have been installed properly and in accordance with the approved submittal.

1.24 TEMPORARY LIGHT & POWER

Refer to Division 01 section "Temporary Facilities and Controls" for additional information and requirement's.

A. Electrical Contractor shall provide these services. Installation of these services shall be paid for by the General Contractor.

B. Under this Section of the specifications, this Contractor shall provide temporary electric service, sized suitable for construction for each trade. This contractor shall provide all material and labor for temporary electrical service per the local power company's requirements and standards with all necessary panelboards, disconnect switches, transformers, conduit, wiring, etc. as required. This contractor shall pay all associated costs, up front.

B. Where temporary electrical service cannot be obtained from the local power company, this contractor shall provide a temporary, on-site, electric generator with all necessary panelboards, disconnect switches, transformers, conduit, wiring, etc. as required. The fuel used for the generator shall be provided and paid for by this Contractor.

C. This contractor shall provide a distribution system with circuits for receptacles and lighting as required for construction. This contractor shall maintain the temporary electrical system during construction and remove the system when construction is complete.

D. Under this section of the specifications, this Contractor shall provide and maintain temporary lighting based on using not less than one 100-watt lamp for each 100 square feet of building floor area and one duplex GFCI receptacle for each 200 square feet of building floor area. Where higher lighting intensities are required by Federal or State laws or otherwise specified, the above specified wattage shall be increased to provide the increase intensities.

E. This contactor shall provide temporary power and telephone services from the local telephone company for site trailers, fax machines, computers, etc., per the general contractor's direction.

F. The service shall incorporate ground fault protection and comply with NEC Article 527 and OSHA requirements.

1.25 PERMITS

A. Obtain all required electrical permits and pay all fees for same.

B. Provide to Engineer, in duplicate, a certificate of final inspection from the authority having jurisdiction for the electrical and systems.

1.26 INSPECTION AND TESTS

A. During the progress of the work it shall be subject to the inspection of the Owner and to such

other inspectors, as may have jurisdiction, including those of the Electric Company, Fire Department and the Telephone Company.

B. The Contractor shall be responsible for correct voltages, tap settings, trip settings and correct phasing on all equipment. Secondary voltages shall be measured at the line side of the main breakers with the breakers in an open position, at panelboards, and at such other location on the distribution systems and branch circuits as directed by the Engineer.

C. At completion of the work, Contractor shall submit to the Owner's representative in writing a statement stating: (1) that the work is complete; (2) that the entire installation is in accordance with the drawings and specifications; (3) that preliminary tests have been made; and (4) that the work is ready for final inspection and test.

D. A final inspection of the installation to determine compliance with the drawings and specifications will be made by the Owner's representative. Work will be checked for quality of materials, quality of workmanship, proper installation and finished appearance. The electrical contractor shall provide the services of the project electrical foreman for inspection purposes. The foreman shall remove and reinstall wiring devices, junction box covers, panelboard trims, switchboard covers, terminal box covers, ceiling tiles, lighting fixtures, etc. as required to facilitate any inspections required by the Owner's representative.

E. The Contractor shall arrange and conduct operating tests on all equipment in the presence of the Owner's representative. The components parts of systems and the various systems shall be demonstrated to operate in accordance with the requirements and intent of this specification. Any non-complying or defective materials or workmanship disclosed as a result of the inspection and tests shall be corrected promptly by the Contractor, and the tests repeated as often as necessary until approved and accepted by the Owner's representative.

F. The Contractor shall visit the site to acquaint himself with existing conditions. No extra compensation will be paid for failure to comply with this paragraph.

1.27 DRAWINGS

A. The drawings show the layout of the electrical systems and indicate the approximate locations of outlets, apparatus, and equipment. The runs of feeders and branches as shown on the drawings are schematic only. The exact routing of branch circuits and feeders shall be determined by the structural conditions and possible obstructions. This shall not be construed to mean that the design of the systems may be changed, but refers only to exact runs between given points. The Engineer reserves the right to revise the drawings from time to time to indicate changes in the work.

B. The Contractor shall consult and review all contract and reference drawings which may affect the location of any outlets, apparatus and equipment to avoid any possible interference and permit full location of outlets, apparatus and equipment up to the time of rough-in is reserved by the Engineer and such change shall be made without additional expense to the Owner.

C. It shall be the responsibility of this Contractor to see that all electrical equipment such as

junction and pull boxes, panelboards switches, controls and such other apparatus as may require maintenance and operation from time to time is made accessible. Although the equipment may be shown on the drawings in certain locations, the construction may disclose the fact that such locations do make its position accessible. In such cases this Contractor shall call the attention of the Engineer to the condition before advancing the construction to a state where a change will reflect additional expense to the Owner.

1.28 OPERATING, INSTRUCTION AND MAINTENANCE MANUALS

A. Refer to Section 017823 – Operation & Maintenance Data for submittal procedures pertaining to operating and maintenance manuals.

B. Each copy of the approved operating and maintenance manual shall contain copies of approved shop drawings, equipment literature, cuts, bulletins, details, equipment and engineering data sheets and typewritten instructions relative to the care and maintenance for the operation of the equipment, all properly indexed. Each manual shall have the following minimum contents:

1. Table of Contents.

2. Introduction:

   a. Explanation of manual and its purpose and use.
   b. Description of the electrical systems.
   c. Safety precautions necessary for equipment.
   d. Illustrations, schematics and diagrams.
   e. Installation drawing.

3. Maintenance:

   a. Maintenance and lubricating instructions.
   b. Replacement charts.
   c. Trouble-shooting charts for equipment components.
   d. Testing instructions for each typical component.
   e. Two (2) typed sets of instructions for ordering spare parts. Each set shall include name, price, telephone number and address of where they may be obtained.

4. Manufacturer's Literature:

   a. All of the equipment for which shop drawings have been submitted and approved.

1.29 MATERIALS

A. All materials furnished under this Division shall be U.L. listed, labeled and approved for the use intended.

B. All computerized equipment shall be year 2000 (Y2K) compliant.

1.30 BIDDER'S REPRESENTATION

A. By the act of submitting a bid for the proposed contract, the Bidder represents that:

1. The Bidder and all subcontractors the Bidder intends to use have carefully and thoroughly reviewed the drawings, specifications and other construction contract documents and have found them complete and free from ambiguities and sufficient for the purpose intended; further that,

2. The Bidder and workmen, employees and subcontractors the Bidder intends to use are skilled and experienced in the type of construction represented by the construction contract documents bid upon; further that,

3. Neither the Bidder nor any of the Bidder's employees, agents, intended suppliers or subcontractors have relied upon any verbal representations, allegedly authorized or unauthorized from the Owner, or the Owner's employees or agents including architects, engineers or consultants, in assembling the bid figure; and further that,

4. The bid figure is based solely upon the construction contract documents and properly issued written addenda and not upon any other written representation.

1.31 UTILITY COMPANY COORDINATION

A. This section includes, but is not limited to coordination with the following utilities, agencies and authorities having jurisdiction:
   1. Power Company: This Contractor shall coordinate with the local utility power company and provide all material & labor required to comply with the utility power company's requirements and standards, prior to ordering any electrical equipment, such as, switchgear, panels, transformers, disconnect switches, TVSS, etc. This Contractor shall confirm metering sequence (hot or cold) and make the appropriate provisions and/or changes for the utility companies approved metering sequence arrangement. Notify Engineer of discrepancies between the plans and the local utility company’s standards. No extra compensation will be given for corrections required to this Contractor for failure to coordinate with the utility company, but corrections shall be made. All A.I.C. ratings, grounding, bonding, concrete pads & curbs, protective bollards, raceways, ductbank, manholes, etc., shall be in accordance with the utility company's standards.
   2. Telephone Company: This Contractor shall coordinate with the local telephone company and provide all material & labor required to comply with the telephone company's requirements and standards, prior to ordering any electrical or telephone equipment, such as, terminal boards, grounding systems, raceways, ductbanks, manholes, etc. This Contractor shall confirm the telephone companies requirements and provide as necessary. Notify Engineer of discrepancies between the plans and the telephone company’s standards. No extra compensation will be given for corrections required to this Contractor for failure to coordinate with the telephone company, but corrections shall be made.
   3. Cable TV Company: This Contractor shall coordinate with the local cable TV

company and provide all material & labor required to comply with the cable TV company's requirements and standards, prior to ordering any electrical or cable TV equipment, such as, terminal boards, grounding systems, raceways, ductbanks, manholes, etc. This Contractor shall confirm the cable TV company's requirements and provide as necessary. Notify Engineer of discrepancies between the plans and the cable TV company's standards. No extra compensation will be given for corrections required for failure to coordinate with the cable TV company, but corrections shall be made.

4. Local Fire Marshal: This contractor shall verify with the local fire alarm official, the type of master-box or municipal connection required for this project. This contractor shall provide all material & labor to comply with the local municipality. Notify Engineer of discrepancies between the plans and the municipality's standards. No extra compensation will be given for corrections required for failure to coordinate with the municipality, but corrections shall be made.
5. Electrical Inspector: Review plans and specifications with the local electrical and/or wiring inspector(s). Obtain and pay for all permits.
6. Building Inspector: Review plans and specifications with the local building inspector, if not done so by the General Contractor.
7. OSHA Representative: Review plans and specifications with the local OSHA representative, if not done so by the General Contractor.
8. Dig Safe: This contractor shall notify and coordinate with Dig Safe prior to any excavation; digging; trenching; grading; tunneling; augering; boring; drilling; pile driving; plowing-in or pulling-in pipe, cable, wire, conduit, or other sub-structure; backfilling; demolition; and blasting related to this Contractor.

B. The Electrical Contractor shall pay for all permits, inspections, labor, material and fees associated with the various Utility Companies coordination requirements mentioned in this section and for this Contractor's work under this project. Note - The Electrical Contractor shall provide <u>an allowance</u> in his/her bid to coordinate, furnish and install the required services per the Utility Provider's specifications and/or direction.

C. HVAC, Plumbing, Fire Protection, and Electrical Drawings are diagrammatic. They indicate general arrangements of mechanical and electrical systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with structural and other trades and to meet Architectural requirements.

D. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Architect. Where the electrical work shall interfere with the work of other trades, assist in working out the space conditions to make satisfactory adjustments before installation. Without extra cost to the Owners, make reasonable modifications to the work as required by normal structural interferences. Pay the General Contractor for additional openings, or relocating and/or enlarging existing openings through concrete floors, walls, beams and roof required for any work which was not properly coordinated. Maintain maximum headroom at all locations. All piping, duct, conduit, and associated components to be as tight to underside of structure as possible.

E. If any electrical work has been installed before coordination with other trades so as to cause interference with the work of such trades, all necessary adjustments and corrections shall be made by the trades involved without extra cost to the Owners.

F. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Architect and Engineer for review and approval.

1.32 SUPPLEMENTARY SUPPORTING STEEL

A. Provide all supplementary steelwork required for mounting or supporting equipment and materials.

B. Steelwork shall be firmly connected to building construction as required.

C. Steelwork shall be of sufficient strength to allow only minimum deflection in conformity with manufacturer's published requirements.

D. All supplementary steelwork shall be installed in a neat and workmanlike manner parallel to floor, wall and ceiling construction: all turns shall be made at forty-five and ninety degrees, and/or as dictated by construction and installation conditions.

E. All manufactured steel parts and fittings shall be galvanized.

1.33 DEMOLITION

A. Prior to submitting bid, visit site and identify existing conditions and difficulties that will affect work of this section. Renovation work will require careful site examination prior to bidding. No compensation will be granted for additional work caused by unfamiliarity with site conditions that are visible or readily construed by an experienced observer. Field verify measurements and circuiting arrangements that are as shown on Drawings. The electrical contractor shall review all of the architects and other trades drawings to verify all areas of renovation and to get a complete understanding of the demolition work required by this project.

PART 2 - PRODUCTS

2.1 CONDUIT

A. Minimum Size: ¾-inch, unless otherwise specified.

B. Underground Installations:
1. More than Five Feet from Foundation Wall: Use thick wall nonmetallic conduit concrete encased.
2. Within Five Feet from Foundation Wall: Use rigid steel conduit concrete encased.
3. In or Under Slab on Grade: Use plastic coated conduit.

4. Minimum Size: 1-inch.

C. Outdoor Locations, Above Grade: Use rigid steel conduit.

D. In Slab Above Grade:
1. Use rigid steel conduit.
2. Maximum Size Conduit in Slab: ¾ inch (19 mm); ½ inch (13 mm) for conduits crossing each other.

E. Wet and Damp Locations: Use rigid aluminum conduit.

F. Dry Locations:
1. Concealed and in Cable-Tray: Use metal clad (MC) cable (see Division 1).
2. Exposed: (Unfinished or utility spaces) Use electrical metallic tubing.

G. Metal conduit: Rigid Steel Conduit shall comply with ANSI C80.1 and be heavy wall zinc coated steel. Rigid Aluminum Conduit shall comply with ANSI C80.5. Intermediate Metal Conduit (IMC) shall be rigid steel. Fittings and Conduit Bodies shall comply with ANSI/NEMA FB 1 and material to match conduit. Acceptable manufacturers are Western Tube and Conduit Company, Allied Tube and Conduit Company and Triangle Wire and Cable, Inc.

H. Flexible metal conduit shall be interlocked aluminum contruction. Fittings shall comply with ANSI/NEMA FB 1. Acceptable manufacturers are AFC Cable Systems, Electri-Flex Company and Eastern Flexible Conduit Technologies. All flexible conduits shall include a grounding conductor.

I. Electrical metallic tubing (EMT) shall comply with ANSI C80.3; galvanized zinc coated steel tubing. Fittings and Conduit Bodies shall comply with ANSI/NEMA FB 1; steel, compression or set screw type. Acceptable manufacturers are Western Tube and Conduit Company, Allied Tube and Conduit Company and Triangle Wire and Cable, Inc.

J. Nonmetal conduit shall comply with NEMA TC 2; Schedule 40 PVC, or as indicated on plans. Fittings and Conduit Bodies shall comply with NEMA TC 3. Acceptable manufacturers are Carlon or approved equal.

K. Flexible nonmetallic conduit (Sealtite) shall be UL and CSA listed for purpose specified and shown. Acceptable manufacturers are Carlon or approved equal.

L. Install conduit in accordance with NECA "Standard of Installation." Install nonmetallic conduit in accordance with manufacturer's instructions.

M. Arrange supports to prevent misalignment during wiring installation. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits. Fasten conduit supports to building structure and surfaces under provisions of Division 1. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary

supports. Do not attach conduit to ceiling support wires.

N. Arrange conduit to maintain headroom and present neat appearance. Route exposed conduit parallel and perpendicular to walls. Route conduit installed above accessible ceilings parallel and perpendicular to walls. Route conduit in and under slab from point-to-point. Do not cross conduits in slab.

O. Maintain adequate clearance between conduit and piping. Maintain 12-inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).

P. Cut conduit square using saw or pipe cutter; de-burr cut ends. Bring conduit to shoulder of fittings; fasten securely. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

Q. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate or factory elbows for bends in metal conduit larger than 2 inch (50 mm) size.

R. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control and expansion joints. All expansion and deflection fittings shall have a ground strap. Provide suitable pull string in each empty conduit except sleeves and nipples. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

S. Ground and bond conduit under provisions of NEC 250.

2.2 (Not Used)

2.3 (Not Used)

2.4 (Not Used)

2.5 BUILDING WIRE & CABLE

A. Building Wire and Cable shall be copper with 600V insulation rated at 75°C minimum, Type XHHW insulation for feeders and branch circuits larger than #3 AWG; Type THHN/THWN insulation for feeders and branch circuits #4 AWG and smaller.

B. Aluminum wiring shall not be accepted.

C. Conductors shall be of soft drawn 98% minimum conductivity properly refined copper,

solid construction where No. 10 AWG and smaller, stranded construction where No. 8 AWG and larger.

D. Exterior of wires shall bear repetitive markings along their entire length indicating conductor size, insulation type and voltage rating.

E. Exterior of wires shall be color coded, so as to indicate a clear differentiation between each phase and between each phase and neutral. In all cases, grounded neutral wires and cables shall be identified by the colors “white” or “gray”. In sizes and insulation types where factory applied colors are not available, wires and cables shall be color coded by the application of colored plastic tapes in overlapping turns at all terminal points, and in all boxes in which splices are made. Colored tape shall be applied for a distance of 6 inches along the wires and cables, or along their entire extensions beyond raceway ends, whichever is less.

F. Final connections to motors shall be made with 18” of neoprene sheathed flexible conduit.

G. Minimum branch circuit conductor size shall be No. 12 AWG installed in conduit. Motor control circuit wiring shall be minimum No. 14 AWG installed in conduit.

H. Fire alarm and security system wiring shall be No. 16 twisted non-shielded pairs for alarm and trouble circuits and a minimum of #14 AWG for device power, control and alarm annunciation circuits.

I. Other wires and cables required for the various systems described elsewhere in this section of the Specifications shall be as specified herein, as shown on the Contract Drawings, or as recommended by the manufacturer of the specific equipment for which they are used, all installed in conduit.

J. Metal clad sheathed cable NFPA 70, type MC may be used for branch circuitry where shown and where run concealed and not subject to physical damage. All branch circuits shall be run in conduit from the panelboard to the first outlet. All type MC cable used shall contain a full size insulated ground conductor. All conductors shall be copper. All type MC cable insulation used shall have voltage rating of 600 volts, shall have a temperature rating of 75° C, and shall be thermoplastic material. Armor material shall be steel and armor design shall be interlocked metal tape. Fire alarm rated MC cable may be used for fire alarm work where concealed and approved by the local Fire Marshal.

K. Metal-Clad cable (Type MC) for circuits supplying computer equipment, electronic discharge lighting and other sensitive electronic equipment shall consist of 90°C THHN copper conductors with insulated ground and oversized neutral conductor (or one full size neutral conductor for each phase conductor). Cable shall be U.L. listed/labeled, and shall meet the requirements of NEC Art. 334 and 675.

L. Use armored cable (AFC Type HCF-90 or equal) for branch circuits and feeders in all

buildings in the following areas; data processing systems, places of assembly, under raised floors, above suspended ceilings and in other environmental air-handling spaces. This cable shall consist of 90°C THHN copper conductors with combined armor/bond wire (equipment) plus a green insulated ground (redundant). Use insulated bushings. Cable shall be U.L. listed/labeled, and shall meet the requirements of NEC Art. 333, 517 and 645.

M. Mineral-insulated metal-sheathed fire-resistive cables, type MI, shall consist of a factory assembly of one or more solid copper conductors insulated with highly-compressed magnesium oxide and enclosed in a seamless, liquid and gas-tight continuous copper sheath. Cables shall be rated for 600 volts. Cable shall comply with Article 330 of the National Electrical Code. Cables shall be classified by Underwriters Laboratories, Inc. as having a 2-hour fire resistive rating. Cable terminations shall be made with UL listed mineral-insulated cable fittings. Installation of MI cables shall be in accordance with the manufacturer's instructions. Cables shall be as manufactured by Pyrotenax USA, Inc., or approved equal.

N. Wiring materials except MI cable shall be manufactured by Triangle, Essex, General Cable, AFC, Southwire or equal.

O. Concealed Dry Interior Locations: Use only building wire Type THHN/THWN or XHHW insulation in raceway, or metal clad cable where concealed and code acceptable.

P. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

Q. Above Accessible Ceilings: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway or metal clad cable where code acceptable.

R. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

S. Exterior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

T. Underground Installations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

U. Wiring methods, in general, are as follows:

1. Galvanized rigid steel conduit shall be used for telephone system sleeves for main cable runs between floors, closets, etc. and for sweeps, bends, etc. in ductbanks and as specifically noted on the plans. EMT shall be used generally for exposed circuiting in unfinished spaces. Metal clad cable (type MC) may be used for branch circuiting and fire alarm rated MC cable for fire alarm circuiting where run concealed and where code acceptable.

2. To prevent transmittal of vibration to conduit, connections to any vibration producing equipment (i.e. transformers, motors, etc.) shall be terminated by 18 inches of flexible metal conduit. Where flexible connections are exposed to grease and oil, liquid-tight flexible metal conduit shall be used.

3. In general, no splices or joints shall be permitted in either feeders or branches except at outlets or accessible junction boxes. Splices in wire #8 AWG and smaller shall be pigtail type, made mechanically tight. All conduit systems shall be complete.

4. Raceway, boxes, etc., run on walls in wet areas which are subject to being washed down, shall be mounted on the walls with 1/4" stand-offs. All boxes shall be cast type.

V. Route wire and cable as required to meet the Project Conditions. Install cable in accordance with the NECA "Standard of Installation." Use solid conductor for feeders and branch circuits 10 AWG and smaller. Use stranded conductors for control circuits. Use conductor not smaller than 12 AWG for power and lighting circuits. Use conductor not smaller than 16 AWG for control circuits. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet (25 m). Pull all conductors into raceway at same time. Use suitable wire pulling lubricant for building wire 4 AWG and larger. Protect exposed cable from damage.

W. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure or ceiling suspension system, cables that are not part of the ceiling system cannot be supported from ceiling supports. Do not rest cable on ceiling panels. Use suitable cable fittings and connectors. Neatly train and lace wiring inside boxes, equipment, and panelboards.

X. Clean conductor surfaces before installing lugs and connectors. Make splices, taps, and terminations to carry full ampacities of conductors with no perceptible temperature rise. Use suitable reducing connectors or mechanical connector adapters for connecting aluminum conductors to copper conductors. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape un-insulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller. Identify and color code wire and cable. Identify each conductor with its circuit number or other designation indicated.

Y. Main feeders to panelboard & load centers may be 3/c or 4/c S/E type aluminum conductor cables.

Z. All unit branch circuit wiring shall be copper.

2.6 BOXES

A. Outlet Boxes:

1. Each outlet in wiring or raceway systems shall be provided with an outlet box to suit conditions encountered. Boxes installed in normally wet locations shall be of cast-metal type having hubs. Concealed boxes shall be cadmium plated, zinc coated sheet metal or non-metallic type. Old work boxes with Madison clamps are not allowed in new construction.

2. Each box shall have sufficient volume to accommodate number of conductors in accordance with requirements of NFPA 70. Boxes shall not be less than 1-1/2" deep unless shallower boxes are required by structural conditions and are specifically approved by Architect. Ceiling and bracket outlet boxes shall not be less than 4" octagonal except that smaller boxes may be used where required by particular fixture to be installed. Flush or recessed fixtures shall be provided with separate junction boxes when required by fixture terminal temperature requirements. Switch and receptacle boxes shall be 4" square or of comparable volume. Luminaire and equipment supporting boxes shall be rated for weight of equipment supported; include 1/2 inch (13 mm) male fixture studs where required.

3. Acceptable Manufacturers:

   a. Appleton
   b. Crouse Hinds
   c. Steel City
   d. RACO

B. Pull and Junction Boxes: Where necessary to terminate, tap off, or redirect multiple raceway runs or to facilitate conductor installation, furnish and install appropriately designed boxes. Boxes shall be fabricated from code gauge steel assembled with corrosion resistant machine screws. Box size shall be as required by Code. Where intermediate cable supports are necessary because of box dimensions, provide insulated removable core brackets to support conductors. Junction boxes are to be equipped with barriers to separate circuits. Where splices are to be made, boxes shall be large enough to provide ample work space. All conductors in boxes are to be clearly tagged to indicate characteristics. Boxes shall be supported independently of raceways. Junction boxes in moist or wet areas shall be galvanized type. Boxes larger than 4 inches square shall have hinged covers. Boxes larger than 12 inches in one dimension will be allowed to have screw fastened covers, if a hinged cover would not be capable of being opened a full 90 degrees due to installation location.

C. Fiberglass Handholes shall be die molded glass fiber. Cable Entrance shall be pre-cut 6-inch x 6-inch (150 mm x 150 mm) cable entrance at center bottom of each side. Cover shall be glass fiber weatherproof cover with nonskid finish.

D. Install boxes in accordance with NECA "Standard of Installation." Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

E. Set wall mounted boxes at elevations to accommodate mounting heights indicated or specified in section for outlet device. Electrical boxes are shown on drawings in approximate locations unless dimensioned. Adjust box location up to 10 feet (3m) if required to accommodate intended purpose. Orient boxes to accommodate wiring devices. Maintain headroom and present neat mechanical appearance.

F. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 7.

G. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

H. Use flush mounting outlet box in finished areas. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness. Use stamped steel bridges to fasten flush mounting outlet box between studs. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

I. Use adjustable steel channel fasteners for hung ceiling outlet box. Do not fasten boxes to ceiling support wires. Support boxes independently of conduit. Use gang box where more than one device is mounted together. Do not use sectional box. Use gang box with plaster ring for single device outlets. Use cast outlet box in exterior locations exposed to the weather and wet locations. Use cast floor boxes for installations in slab on grade; formed steel boxes are acceptable for other installations. Set floor boxes level.

J. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

K. Adjust floor box flush with finish flooring material. Adjust flush-mounting outlets to make front flush with finished wall material. Install knockout closures in unused box openings.

2.7 WIRING DEVICES

A. Provide wiring device type plates for all wall-mounted devices. All wall plates shall be white smooth high impact nylon for all public areas as directed by the Architect. Provide galvanized steel for all Utility, Electric and Mechanical Rooms. Colors of wall plates shall be white.

B. Wiring devices standard for the project (i.e., with no specific type indicated) shall conform to the following:

   1. Visible part colors of wiring devices shall be as directed by the Architect for all public areas. Provide white colored devices for all Utility, Electrical and Mechanical rooms.

   2. Exclude compact type devices.

C. Wiring device switches shall be toggle type, A.C. quiet design, specification grade, 20 amps on 120 volt circuits. Switches shall be mounted 48" to center line above finished floor unless noted otherwise.

   1. Single pole switch shall be equal to Hubbell No. HBL 1221.

   2. Double pole switch shall be equal to Hubbell No. HBL 1222.

   3. Three-way switch shall be equal to Hubbell No. HBL 1223

   4. Four-way switch shall be equal to Hubbell No. HBL 1224

   5. Single pole pilot light switch shall be equal to Hubbell No. HBL 1221PL.

D. Standard duplex convenience receptacles shall be 125 volt, 20 amps, three wire (two circuit wires plus ground), "U-slot" ground NEMA configuration 5-20R, specification grade. Receptacles shall be mounted 18" to center line above finished floor unless noted otherwise.

   1. Equal to Hubbell No. 5362.

   2. Where indicated on plans provide receptacles with ground fault current interrupters, UL Class A; 20A, 125V to be equal to Hubbell No. GF5362.

E. Non-standard convenience receptacles and special purpose power supply receptacles shall be as listed on plans.

F. Weatherproof Receptacle Enclosures shall be NEMA 3R rated for rain-tight while-in-use, gasketed, impact resistant thermoplastic with hinged gasketed device cover.

G. Provide extension rings to bring outlet boxes flush with finished surface. Clean debris from outlet boxes. Install devices plumb and level. Install receptacles with grounding pole on top. Connect wiring device grounding terminal to branch circuit equipment grounding conductor. Use jumbo size plates for outlets installed in masonry walls. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

H. Install wall switch 48 inches above finished floor to top of handle. On position shall be up. Install convenience receptacles 18 inches above finished floor. Install convenience receptacle 6 inches above backsplash of counter. Install dimmer switches 48 inches above finished floor to top.

I. Coordinate all devices & outlets above, below or on casework with Architect & Owner in order to position at the proper height and proper location.

J. Verify that each receptacle device is energized. Test each receptacle device for proper polarity. Test each GFCI receptacle device for proper operation.

2.8 CABINETS & ENCLOSURES

A. Cabinets shall be as follows: Boxes: Galvanized steel. Box Size: As required and/or indicated on plans. Backboard: Provide 3/4-inch thick plywood backboard for mounting terminal blocks. Paint matte white. Fronts: Steel, flush type with concealed trim clamps, door with concealed hinge, and flush lock keyed to match branch circuit panelboard. Finish with gray baked enamel. Knockouts: As required and/or indicated on plans. Provide metal barriers to form separate compartments wiring of different systems and voltages. Provide accessory feet for free-standing equipment.

B. Hinged Cover Enclosures shall be as follows: Construction: NEMA 250, Type 1, 3R, or 4 steel enclosure, as required and/or indicated on plans. Covers: Continuous hinge, held closed by flush latch operable by key or hasp and staple for padlock. Provide interior plywood panel for mounting terminal blocks and electrical components; finish with white enamel. Enclosure Finish: Manufacturer's standard enamel.

C. Install in accordance with NECA "Standard of Installation." Install enclosures and boxes plumb. Anchor securely to wall and structural supports at each corner under the provisions of Section 16190. Install cabinet fronts plumb.

D. Clean electrical parts to remove conductive and harmful materials. Remove dirt and debris from enclosure. Clean finishes and touch up damage.

E. ICS 4 - Terminal blocks for industrial control equipment and systems. Power Terminals: Unit construction type with closed back and tubular pressure screw connectors, rated 600 volts. Signal and Control Terminals: Modular construction type, suitable for channel mounting, with tubular pressure screw connectors, rated 300 volts. Provide ground bus terminal block, with each connector bonded to enclosure.

F. Provide grounding provisions for all cabinets/enclosures and bond to grounding system as required per Code.

2.9 GROUNDING & BONDING

A. Ground all systems and equipment in accordance with best industry practice, the requirements of NFPA 70 and the following:

1. The ground bus of the main switchboard shall be connected to the main grounding electrode specified below by means of insulated conductors run in conduit.

2. The main grounding electrode shall be an accessible point on the nearest metallic main water service pipe. Connection shall be made on the street side of the main valve utilizing a ground clamp of a type specifically manufactured for the purpose. Bonding jumpers shall be provided around the water meters and around insulating joints and/or sections.

3. Establish a ground bonding connection from the effectively grounded structural building steel to each cold water main entering the building. Each bonding connection shall consist of insulated conductors run in conduit.

4. The water pipe ground shall be supplemented by:
   a. Additional electrodes (minimum of one setup) consisting of three (3) buried 3/4" diameter by 10’-0” long copperweld ground rods spaced 10’-0” apart, and provided in sufficient quantity so as to have measured resistance to ground of not more than 10 ohms. Provide independent certification confirming ground resistance at each test location. Establish a bonding connection from the electrode consisting of green insulated conductors run in conduit and sized as indicated hereinafter for main and supply side of service bonding jumpers.
   b. Ground ring conductor (counterpoise) extending around the perimeter of the building. Bury counterpoise not less than 30 inches below grade and 10 feet from building foundation. Use tinned-copper conductor not less than #2/0AWG for counterpoise and for the tap to building steel. The counterpoise conductor trench shall be filled with 1” of Erico G.E.M. above and below the conductor.
   c. Ground the steel framework of the building with a ground rod at every column and at every other exterior column. The ground rods shall be located in the counterpoise trench and shall be attached to the counterpoise. The top of the ground rods shall not be less than 24” below grade.

5. Provide grounding bonds between all metallic conduits of the light and power system which enter and leave cable chambers or other non-metallic cable pulling and splicing boxes. Accomplish this by equipping the conduits with bushings of the grounding type individually cross connected.

6. Bond metallic conduits containing grounding electrode conductors and main bonding conductors to the ground bus service enclosure and/or grounding electrode at both ends of each run utilizing grounding bushings and jumpers.

7. Provide grounding bonds for all metallic conduits of the light and power system which terminate in pits below equipment for which a ground bus is specified. Accomplish this by equipping the conduits with bushings of the grounding type connected individually to the ground bus.

8. Provide supplementary ground bonding where metallic conduits terminate at metal clad equipment (or at the metal pull box of equipment) for which a ground bus is specified.

Accomplish this be equipping the conduits with bushings of the grounding type connected individually by means of jumpers to the ground bus. Exclude the jumpers where directed. This exclusion will be required where an isolated ground for electronic equipment is to be maintained.

9. Each grounding type bushing shall have the maximum ground wire accommodation available in standard manufacture for the particular conduit size. Connection to bushing shall be with wire of this maximum size.

10. Bonding conductors on the load size of the service device and equipment grounding conductors shall be sized in relation to the fuses or trip size of the overcurrent device supplying the circuit.

11. The central equipment for the fire protective alarm system, telephone system, data system (Data Rooms) and security system shall have its grounding terminal connected to the grounding electrode by means of a No. 6 green coded insulated conductor, run in 3/4" conduit. Utilize a ground clamp of a type specifically manufactured for the purpose.

12. Install rod electrodes per this section & in compliance with Code. Install additional rod electrodes as required to achieve specified resistance to ground. Install 4/0 AWG bare copper wire in foundation footing as required. Provide isolated grounding conductor for circuits supplying personal computers as indicated on the plans. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing. Provide a 3/4” raceway with #6 AWG ground wire from main telephone terminal board to the service ground.

13. Perform inspections and tests listed in NETA ATS, Section 7.13. Document test results in Record Documents.

14. Swimming Pools, fountains & similar installations: Refer to NEC 680 for requirements for grounding and bonding. Provide all grounding and bonding per NEC 680 and 250.

15. Provide a #6AWG insulated grounding conductor in 3/4" conduit to electrical service grounding electrode system. Leave 10'-0" of grounding conductor coiled at backboard.

16. In raceways, use insulated equipment grounding conductors.

17. Exothermic-welded connections shall be used for all connections to structural steel, ground rods, signal reference grid, counterpoise conductors and all underground connections, except those at test wells.

18. Compression connectors (Ilsco type CRA or equal) shall be used for all equipment grounding conductor terminations.

19. Provide an equipment grounding conductor to duct mounted electrical devices operating at 120volts and above, including pumps, fans, lowers, air cleaners and heaters. Bond conductor to each unit and to air ducts. Use braided-type bonding straps.

20. Provide a separate equipment grounding conductor to each electric water heater, heat-tracing assembly and anti-frost heating cable. Bond conductor to heater units, piping, connected equipment and components.

21. Record locations of all ground rods, ground ring and water pipe connections on a set of as-built plans and submit to the Architect and building Owner along with test certification.

2.10 EQUIPMENT WIRING SYSTEM

A. Cords & Caps: Manufacturers: Hubbel, Pass & Seymour or Arrow Hart. Attachment Plug Construction: Conform to NEMA WD 1. Configuration: NEMA WD 6; match receptacle configuration at outlet provided for equipment. Cord Construction: ANSI/NFPA 70, Type SO multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

B. Motor Control Equipment: Each motor shall have a starter furnished under this Section where it is not being supplied by other sections. Wire and installed under this Section, unless otherwise noted herein or on the drawings.
   1. Connect the motor starting devices for all motors, except where otherwise specifically provided for under other sections, furnish all necessary connections between controllers and motors, in conduit and leave motors ready to start. Change connections, if necessary, to secure proper rotation of motors.
   2. Perform all the necessary wiring in connection with the motor starting and remote control equipment, where so designated, furnished under other sections. Where control or starting equipment is sent to the job as individual units, they shall be installed, wired up complete and left ready for operation under work of this section.
   3. Wiring to motor shall be in rigid conduit with watertight flexible conduit from wall to motor only.

C. Included in the general requirements for motor control equipment wiring and connections, the following specified items shall be performed:

   1. Installation and connection of motor controls which will be furnished under the heating, ventilating and air conditioning section and the plumbing section.

D. Starters by This Contractor: Where starters are not provided under other sections, this Contractor shall furnish starters for motors 1/2 HP and larger and where required by the control sequence for smaller motors and shall be magnetic across the line starters with adjustable overload protection in each phase line, all in NEMA 1 enclosures. Starters shall be solid state or acceptable substitute. Combination starters shall be with fused or non-fusible disconnect as required.

1. Magnetic starters shall have 120 volt holding circuits, integral transformers, auxiliary contacts as required by the control sequence and integral selector switches with push-to-test pilot lights. One side of each pilot light shall be connected on the load side of the motor starter.

2. Integral transformers shall have overload protection on the secondary section and, also, the secondary neutral shall be grounded.

3. Starters shall be as manufactured by Square D Company or General Electric.

E. Temperature control wiring shall be by others as indicated under the heating, ventilating and air conditioning section.

F. Provide a suitable plywood backboard on a wall and/or angle iron or unistrut framework with plywood for all starters. Starters will be installed and wired under this section.

G. All starters shall be located next to the panel feeding same, if panel is in a closet or utility space, unless noted otherwise on the drawings. If panel is located in a finished space (i.e. corridor, gymnasium, etc.) starters shall be located in nearby utility closet or space acceptable to the Engineer.

H. Nameplates: Each starter shall have a 1.0" x 2.5" hot stamped nameplate identifying the unit and panel it is fed from. The lettering shall be white 1/2" high in a black background.

I. Connections to systems: Make electrical connections in accordance with equipment manufacturer's instructions. Make conduit connections to equipment using flexible conduit. Use liquid-tight flexible conduit with watertight connectors in damp or wet locations. Make wiring connections using wire and cable with insulation suitable for temperatures encountered in heat producing equipment. Provide receptacle outlet where connection with attachment plug is indicated. Provide cord and cap where field-supplied attachment plug is indicated. Provide suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes. Install disconnect switches, controllers, control stations, and control devices as indicated. Modify equipment control wiring with terminal block jumpers as indicated. Provide interconnecting conduit and wiring between devices and equipment where indicated

2.11 SUPPORTING DEVICES

A. Materials and Finishes: Provide adequate corrosion resistance. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products. Steel channel shall be galvanized.

B. Anchors and Fasteners:
   1. Concrete Structural Elements: Use precast insert system, expansion anchors.
   2. Steel Structural Elements: Use beam clamps, or welded fasteners.

3. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
5. Solid Masonry Walls: Use expansion anchors or preset inserts.
6. Sheet Metal: Use sheet metal screws.
7. Wood Elements: Use wood screws.

C. Installation: Install products in accordance with manufacturer's instructions. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation". Do not fasten supports to pipes, ducts, mechanical equipment, and conduit. Do not use spring steel clips and clamps. Do not use powder-actuated anchors. Do no drill or cut structural members. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts. Install surface-mounted cabinets and panelboards with minimum of four anchors. In wet and damp locations use steel channel supports to stand cabinets and panelboards one inch off wall. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

2.12 ELECTRICAL IDENTIFICATION

A. Nameplates: Engraved three-layer laminated plastic, black letters on white background. Locations: Each electrical distribution and control equipment enclosure, communication cabinets and power outlet faceplates indicating panel & circuit number the outlet is fed from. Letter Size: Use 1/8 inch letters for identifying individual equipment and loads. Use 1/4 inch letters for identifying grouped equipment and loads.

B. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background. Use for identification of individual wall switches and receptacles and control device stations. In addition to nameplates as described above, use labels on all panelboards, disconnect switches and enclosed circuit breakers to identify where the equipment is fed from, voltage & phase.

C. Wire markers: Tape, or tubing type wire markers. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection. Power and Lighting Circuits shall be marked with panel and branch circuit or feeder number as indicated on drawings. Control Circuits shall be marked with control wire number indicated on schematic and interconnection diagrams on drawings.

D. Conduit markers: Corrosion and abrasion resistant. Location: Furnish markers for each conduit longer than 6 feet (2 m). Spacing: 20 foot on center. Indicate voltage and phase.

E. All panelboards shall be provided with a typed (hand written is not allowed) circuit directory indicating the load fed by each circuit breaker and it’s location in the building.

2.13 UTILITY SERVICE ENTRANCE

A. Arrange with local Electric Utility Company to obtain permanent electric service to the building. Install transformer pad, oil curb, metering transformer cabinets and meter base as required by Utility Company. Verify hot or cold sequence with the Utility Company and make provisions in switchgear to accommodate hot or cold sequence as required.

B. Arrange with local Telephone Utility Company to obtain permanent telephone service to the building. Provide all conduits, ductbank, terminal boards, grounding, and all material & labor as required by the Telephone Company.

C. Arrange with local Cable Television (CATV) Utility Company to obtain permanent CATV service to the building. Provide all conduits, ductbank, terminal boards, grounding, and all material & labor as required by the CATV Company.

2.14 (Not Used)

2.15 ENCLOSED SWITCHES

A. Fusible Switch Assemblies shall be provided in accordance with the following. Description: NEMA KS 1, Type GD with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter knife switch. Handle lockable in OFF position. Fuse clips: Designed to accommodate NEMA FU1, Class R fuses. Provide NEMA 3R where located outdoors, kitchens or other interior wet areas.

B. Non-fusible switch assemblies shall be provide in accordance with following. Description: NEMA KS 1, Type GD with externally operable handle interlocked to prevent opening front cover with switch in ON position enclosed load interrupter knife switch. Handle lockable in OFF position. Provide NEMA 3R where located outdoors, kitchens or other interior wet areas.

C. Install in accordance with NECA "Standard of Installation”. Install fuses in fusible disconnect switches. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

2.16 (Not Used)

2.17 PANELBOARDS

A. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

B. Panelboard Bussing: Bus bars shall be copper. Provide copper ground bus bar in all panelboards. Provide additional 200% rated neutral bus bar and isolated ground bus bar as indicated on plans, schedules, etc.

C. Minimum Integrated Short Circuit Rating: 10,000 amperes RMS symmetrical for 240 volt panelboards or as indicated.

D. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits, Type HACR for air conditioning equipment circuits, Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.

E. Current Limiting Molded Case Circuit Breakers: NEMA AB 1, circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.

F. Enclosure: NEMA PB 1, Type 1.

G. Cabinet Box: 6 inches (153 mm) deep, 20 inches (508 mm) wide for 240 volt and less panelboards.

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H. Cabinet Front: Flush or Surface cabinet front as scheduled with concealed trim clamps, concealed hinge, metal directory frame, and flush lock all keyed alike. Finish in manufacturer's standard ANSI 49 enamel.

I. Provide 125 amp, 120/208V, single phase, three-wire load centers to each dwelling unit located at 570 Cranston Street.

J. Provide 125 amp, 120/240V, single phase, three-wire load centers to each dwelling unit located in all other apartment building.

2.18 ENCLOSED CIRCUIT BREAKERS

A. Enclosed Molded Case Circuit Breaker: Comply with NEMA AB 1. Service Conditions: 86 degrees F. and altitude of 1000 feet. Include provisions for padlocking. Provide insulated grounding lug in each enclosure. Provide Products suitable for use as service entrance equipment where so applied. Fabricate enclosure from steel.

B. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions. Install enclosed circuit breakers plumb. Provide supports in accordance with these specifications. Height: 5 ft (1.6 M) to operating handle. Provide engraved plastic nameplates.

C. Inspect each circuit breaker visually. Perform several mechanical ON-OFF operations on each circuit breaker. Verify circuit continuity on each pole in closed position. Determine that circuit breaker will trip on overcurrent condition, with tripping time to NEMA AB 1 requirements. Include description of testing and results in test report.

D. Adjust trip settings so that circuit breakers coordinate with other overcurrent protective devices in circuit. Adjust trip settings to provide adequate protection from overcurrent and fault currents.

2.19 FUSES

A. Cartridge fuses shall be as follows:

1. Provide a complete set of fuses for each item of fusible type equipment. Fusible equipment furnished by other contractors will be complete with fuses.

2. Secondary system fuses, rated at 600 volts or less, shall be UL listed and constructed in conformance with the applicable standards set forth by NEMA and ANSI. All fuses of a particular class shall be of same manufacturer.

3. Regardless of actual fault current, they shall, at full recovery voltage, be capable of safely interrupting fault currents of 200,000 amperes RMS symmetrical or 340,000 amperes RMS asymmetrical, deliverable at the line side of the fuse.

4. Circuits 0-600 amperes shall be protected by the equal of Bussman "Low Peak" current limiting fuses, LPN-RK (250 volts), LPS-RK (600 volts), UL class RK-1.

5. Fuses shall be suitable for application to fuse gaps which reject other types of fusing.

6. Supply 10% spare fuses of each size and type 60 amps and less. Supply three (3) spare fuses for each size and type over 60 amps.

B. Cartridge fuses shall be manufactured by Bussman, Gould or Littlefuse.

C. Install fuse with label oriented such that manufacturer, type, and size are easily read.

2.20 ENCLOSED MOTOR CONTROLLERS

A. The Electrical Contractor shall review the mechanical drawings and coordinate with the Mechanical Contractor for electrical components of the mechanical equipment and systems such as motors, factory mounted motor starters, factory mounted disconnect switches, variable frequency drives and controls to be provided under Division 23 (by the Mechanical Contractor).

B. The Electrical Contractor shall provide motor starters, variable frequency drives and disconnect switches for equipment shown on the drawings where the Mechanical Contractor is not providing such equipment.

C. All motor starters, disconnect switches and variable frequency drives in the motor control center (MCC) shall be provided by the electrical contractor in accordance with this Specifications.

D. The electrical contractor shall provide all power wiring for all HVAC equipment.

E. Manual Motor Controller: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller with thermal overload elements on each phase, red pilot light, NO, NC auxiliary contact, and push button or toggle operator.

F. Fractional Horsepower Manual Controller: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload elements on each phase, red pilot light, and toggle operator.

G. Motor Starting Switch: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller for fractional horsepower induction motors, without thermal overload elements on each phase, with red pilot light and toggle operator.

H. Enclosures: NEMA ICS 6; Type 1 for indoors and Type 3R for outdoors and wet/damp locations (kitchens, mechanical rooms, pool equipment rooms, etc...).

I. Automatic Magnetic Motor Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower. Reversing Controllers: Include electrical interlock and integral time delay transition between FORWARD and REVERSE rotation. Two Speed Controllers: Include integral time delay transition between FAST and SLOW speeds. Coil operating voltage: 120volts, 60 Hertz. Overload Relay: NEMA ICS; bimetal or melting alloy. Enclosure: NEMA ICS 6, Type 1 for indoors or Type 3R for outdoors and wet/damp locations (kitchens, mechanical rooms, pool equipment rooms, etc...).

J. Product Options and Features as follows. Auxiliary Contacts: NEMA ICS 2, 2 each normally open and closed contacts in addition to seal-in contact. Cover Mounted Pilot Devices: NEMA ICS 2, standard duty type. Pilot Device Contacts: NEMA ICS 2, Form Z, rated A150. Pushbuttons: Recessed type. Indicating Lights: LED type. Selector Switches: Rotary type. Relays: NEMA ICS 2. Control Power Transformers: 120 volt secondary, in each motor starter. Provide fused primary and secondary, and bond un-fused leg of secondary to enclosure.

K. Installation Requirements: Install enclosed controllers where indicated, in accordance with manufacturer's instructions. Install enclosed controllers plumb. Provide supports in accordance with these specifications. Height: 5 feet to operating handle. Install fuses in fusible switches. Select and install overload heater elements in motor controllers to match installed motor characteristics. Provide engraved plastic nameplates under these specifications. Provide neatly typed label inside each motor controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating.

2.21 (Not Used)

2.22 ENCLOSED CONTACTORS

A. General purpose contactors: NEMA ICS 2, AC general purpose magnetic contactor. Coil Voltage as indicated. Poles as indicated. Size as indicated. Enclosure per ANSI/NEMA ICS 6, Type as scheduled.

B. Lighting contactors: NEMA ICS 2, magnetic lighting contactor. Coil Voltage as indicated. Poles as indicated. Size as indicated. Contact Rating shall match branch circuit overcurrent protection, considering de-rating for continuous loads.

C. Accessories: Provide Pushbuttons and Selector Switches per NEMA ICS 2, heavy duty type. Provide indicating lights per NEMA ICS 2, push-to-test type. Provide auxiliary contacts per NEMA ICS 2, Class A300 or A600 as required per equipment served.

2.23 INTERIOR LUMINAIRES – Verify lighting package with architect.

A. Lighting fixtures shall be in accordance with identifications on the drawings and the following:

B. Finishes shall be as selected by the Architect or as indicated on the plans and/or schedules.

C. Any additional appurtenances required for installation and operation, where same are not covered by the identification used on the drawings, shall be included. Lighting fixtures and equipment shall be furnished complete, wired and assembled, including canopies, lamps and other incidental items. Install specified lamps in each luminaire.

D. Recessed fixtures shall be coordinated with ceiling construction.

E. Exact location of all fixtures shall be confirmed with Architect prior to rough-in. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.

F. Locate recessed ceiling luminaires as indicated on reflected ceiling plan. Install recessed luminaires to permit removal from below. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating. Install clips to secure recessed grid-supported luminaires in place. Install wall mounted luminaires, and exit signs at height as scheduled. Install accessories furnished with each luminaire. Connect luminaires, and exit signs to branch circuit outlets using flexible conduit. Recessed fixtures throughout shall have their components, wiring and external connections coordinated for use in ceilings utilized as air handling plenums. Install recessed luminaires to permit removal from below. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating. Install clips to secure recessed grid-supported luminaires in place

G. Fixtures for use outdoors or in areas designated as damp locations, shall be suitably gasketed and UL listed for such applications. All exposed lamp fluorescent fixtures specified for use under cabinets/above counters, strip fixtures, etc… shall have lamps fitted with safety tube covers with end caps, Bergen Industries "Tube-Guard" or equal

H. All ballasts or transformers for discharge type lamps shall be for 60-cycles operation. All ballasts or transformers for discharge or fluorescent type lamps shall be high power factor type.

I. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.

J. In-line fuses shall be provided for all ballast and transformers. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire

K. Ballasts for T5 and T8 fluorescent lamps shall be electronic high frequency electronic type (20 KHZ or greater) type "P", class "A" sound-rated, instant start and parallel wired such that if one lamp burns out the remaining lamps stay lit. Electronic ballasts shall comply with UL 935, ANSI C82.1, CBM certified and meet FCC standards for EMI/RFI (FCC 47 CFR Part 18 non-consumer) with a total harmonic distribution of less than 20%. Ballasts shall carry a manufacturer's warranty of five (5) years and be manufactured by Osram Sylvania, Magnetek, Advance, or approved equal. Remote ballasts shall be standard core and coil type "P", sound rating "A".

L. All fluorescent dimming ballasts shall be continuous, flicker-free and be capable of dimming down the measured light from 100% to 1% of the lamps light output. All fluorescent dimming ballasts shall have internal fusing and the total harmonic distortion (THD) shall be less than 10%. All fluorescent dimming ballasts shall be equal to Lutron Hi-lume.

M. All ballasts or transformers for discharge type lamps intended for use outdoors shall be of the low temperature type having the lowest temperature rating available in standard manufacture.

N Ballasts and transformers shall be of the "low energy full light output" type where available. Each shall not exceed industry minimum rated input wattage by more than 8%.

O. All fixtures shall be UL approved with labels attesting thereto.

P. All lamps shall be included. Except where specifically noted otherwise all fluorescent lamps shall be as follows:

1. Fluorescent lamps of the proper wattage and voltage rating shall be provided in each fixture as indicated on the fixture schedule. All fluorescent lamps shall be manufactured to appropriate specifications given in ANSI C78. Unless noted otherwise, fluorescent lamps shall be T8 3500K and have a minimum CRI of 82.
2. Unless otherwise noted, all compact fluorescent lamps shall be 3500K and have a minimum CRI of 82. The Contractor shall verify that the proper lamp type for the specified ballast type is furnished with the compact fluorescent fixture. Compact fluorescent ballasts shall be UL listed, Class P, Type 1 and CBM Certified. Where 4-pin electronic ballast compatible compact fluorescent lamps are specified, electronic ballasts shall include circuitry capable of sensing when lamp is approaching end of life and shut show the lamp circuit. This end of

life sensing must be impervious to low/high line voltage conditions and result in no false tripping or overheating of lamp bases.

Q. The Contractor shall obtain all information relative to the exact type of hung ceilings and suspension systems to be installed before ordering any recessed fixtures. This Contractor shall furnish the proper type fixtures applicable to the ceiling framing system. If, other than the type of fixtures specified are required for installation due to the type of ceiling construction, this Contractor shall furnish and install the proper type fixtures and mounting appurtenances required at no extra charge.

R. The Contractor shall coordinate the exact locations of all lighting fixtures with the ceiling pattern during the construction period and before installation of the fixtures. Interferences between lighting fixtures, and other equipment, shall be brought to the attention of the General Contractor.

S. Include the aiming and/or adjustments of all lighting fixtures requiring same in accordance with instructions issued by the Architect in the field. Aim and adjust luminaires as indicated or as directed by the Owner, Architect or Engineer. Position exit sign directional arrows as indicated. Operate each luminaire after installation and connection. Ensure proper connection and operation.

T. All lamp sockets in lighting fixtures shall be suitable for the indicated lamps and shall be set so that the lamps are positioned in optically correct relation to all lighting fixture components.

U. Lighting fixtures shall be supported from building structure only, not from hung or suspended ceiling, by means of chains or threaded rods. The use of tie wire will not be allowed. All fixtures shall include seismic clips and shall be supported to comply with seismic regulations. Install suspended luminaires using pendants supported from swivel hangers or other suitable leveling means. All rows of fixtures shall be level, aligned with building lines and run parallel to each other. Provide pendant length required to suspend luminaire at indicated height. Support luminaires to building structure, independent of ceiling framing.

V. Lamps shall be manufactured by General Electric, Phillips. OSRAM, or Sylvania.

W. Bond products and metal accessories to branch circuit equipment grounding conductor.

X. Refer to Division 01 section “Energy Star Requirements”, for information regarding rebates, fixtures types, etc.

2.24 (NOT USED)

2.25 TELEPHONE

A. Provide incoming telephone service raceways and cable as indicated on Drawings or as required by the serving telephone company. Provide 8' x 8' x ¾" plywood board (and one double duplex outlet) on wall for telephone equipment. Provide 3/4-inch thick plywood board, fire-retardant-treated and stamped FRT, securely anchored to the wall. Provide flush mounted telephone outlets with 3/4-inch EMT conduit concealed from outlet box to telephone terminal board. Leave a pull string in all empty conduits.

B. Provide a #6AWG insulated grounding conductor in 3/4" conduit to electrical service grounding eletrode system. Leave 10'-0" of grounding conductor coiled at backboard.

C. The Electrical Contractor shall furnish and install telephone outlets and wiring as shown on the drawings. Refer to the Electrical plans for location of telephone board and telephone jack locations.

2.26 (Not Used)

2.27 CABLE TELEVISION

A. Provide incoming cable television service raceways and cable as indicated on Drawings or as required by the serving cable television company. Provide 8' x 8' x ¾" plywood board (and one double duplex outlet) on wall for cable equipment. Provide 3/4-inch thick plywood board, fire-retardant-treated and stamped FRT, securely anchored to the wall. Provide flush mounted CATV outlets with 3/4-inch EMT conduit concealed from outlet box to cable terminal board. Leave a pull string in all empty conduits.

B. Provide “monster cable” with coax and cat 5 wires homerun from each “tv” outlet to a punch-down panel at the basement.

2.28 LIGHTING FIXTURES – Refer to section 2.23 for additional information.

A. Verify ceiling construction and provide fixtures with ballasts, frames, rings and other accessories suitable for the construction encountered. Fixtures shall be located as indicated on the drawings.
B. Installation of fixtures shall be coordinated with installation of ceiling materials and suspension method used.
C. Investigate lighting fixture locations and supporting means to ensure that no interference exists between lighting fixture, supporting means and other equipment.
D. For specific lamp requirements, refer to fixture schedule. All fixtures shall be furnished complete with lamps.
E. Incandescent and tungsten halogen lamps shall not be operated other than for initial testing, prior to final inspection.
F. Fluorescent fixture lenses shall be extruded clear 100 percent virgin acrylic. Lens thickness shall be .125" minimum.

G. Recessed Incandescent Luminaries: Shall be pre-wired type with junction box forming an integral part of the assembly. Provide with thermal protection with identifying label.
H. All exposed lamp fluorescent fixtures specified for use under cabinets/above counters shall have lamps fitted with safety tube covers with end caps, Bergen Industries "Tube-Guard" or equal.
I. Lamp locks shall be included in all open 430 ma lamp fixtures installed in areas subject to excessive vibration.
J. All lighting fixtures (surface or recessed) shall be supported from the building structure, at a minimum of two points for fluorescent light fixtures up to 2' x 4' and at four points for 4' x 4' fixtures. Incandescent light fixtures shall be supported from a minimum of one point and be completely independent of the ceiling involved. Supports shall be wire, chain or threaded rod of sufficient strength to carry the fixture. Fluorescent fixtures shall be supported at each end of a diagonal axis of the fixture.
K. Install suspended luminaires using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.
L. Support luminaires larger than 2 x 4 foot size independent of ceiling framing.
M. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.
N. Exposed Grid Ceilings: Support surface mounted luminaires on grid ceiling directly from building structure.

2.29 (NOT USED)

2.30 INTRUSION DETECTION

A. Refer to Division 28, Section 281600 “Intrusion Detection” for additional information.

PART 3 – EXECUTION

3.01 BASIC REQUIREMENTS

A. Adhere to best industry practice and the following:

1. All work shall be concealed.

2. Route circuitry runs embedded in concrete to coordinate with structural requirements.

3. Equip each raceway intended for the future installation of wire or cable with a nylon pulling cord 3/16” in diameter and clearly identify both ends of the raceway.

4. Provide all outlet boxes, junction boxes, and pull boxes for proper wire pulling and device installation. Include those omitted from the drawings due to symbolic methods of notation.

5. Utilize lugs of the limited type to make connections at both ends of cables installed on the line side of main service overcurrent and switching devices. Provide cable limiters for each end of each service entrance cable.

6. Beyond the termination of raceways, fireproof the following:

   a. All wires and cables within pad-mounted transformer enclosure.

   b. All service feeder cables ahead of main service overcurrent protection devices, and elsewhere where not in raceways.

   c. Fireproofing of wires and cables shall be by means of a half-lapped layer of arcproof or by means of sleeving of a type specifically manufactured for the purpose. Ends of tape or sleeving shall be severed with twine. Fireproofing shall be extended up into raceways. After conductors have been finally shaped into their permanent configuration, fireproofing tape or sleeving shall be coated with silicate of soda (water glass). Fireproofing shall be applied in an overall manner to raceway groupings of conductors.

7. Provide all sleeves through fireproof and waterproof slabs, walls, etc., required for electric work.

   a. Provide waterproof sealing for the sleeves through waterproof slabs, walls, etc.

   b. Provide fireproof sealing for the sleeves through fireproof walls, slabs, etc.

   c. Provide fireproof sealing for the openings in fireproof walls, slabs, etc., resulting from removal of existing electrical sleeves, conduits, poke-thru's etc.

8. No splicing of wires will be permitted in Fire Alarm System.

9. Bundle wiring passing through pull boxes and panelboards in a neat and orderly manner with plastic cable ties. Cable ties shall be by Ty-Raps as manufactured by Thomas & Betts, Holub Industries Inc., Quick Wrap, Bundy Unirap, or equal.

10. Turn branch circuits and auxiliary system wiring out of wiring gutters at 90 degrees to circuit breakers and terminal lugs.

3.02 TESTING REQUIREMENTS & INSTRUCTIONS

A. The Electrical Subcontractor shall provide supervision, labor, materials, tools, test instruments and all other equipment or services and expenses required to test, adjust, set, calibrate, and operationally check work and components of the electrical systems and circuitry throughout Division 16 work.

B. The Electrical Subcontractor shall pay for all tests specified in Division 16, including expenses incident to retests occasioned by defects and failures of equipment to meet specifications, at no additional cost to the Owner. Any defects or deficiencies discovered in any of the electrical work shall be corrected.

   6. The Electrical Subcontractor shall:

a. Replace wiring and equipment found defective (defined as failing to meet specified requirements) at no additional cost to the Owner.

b. Submit three (3) copies of test results to the Engineer.

C. Do not void equipment warranties or guarantees by testing and checkout work. Checks and tests shall be supplemental to and compatible with the Manufacturer's installation instructions. Where deviations are apparent, obtain the Manufacturer's approved review of procedures prior to testing. Where any repairs, modifications, adjustments, tests or checks are to be made, the Contractor shall contact the Engineer to determine if the work should be performed by or with the Manufacturer's Representative.

D. Tests are to:

1. Provide initial equipment/system acceptance.

2. Provide recorded data for future routine maintenance and trouble-shooting.

3. Provide assurance that each system component is installed satisfactorily and can be expected to perform, and continue to perform its specified function with reasonable reliability throughout the life of the facility.

E. At any stage of construction and when observed, any electrical equipment or system determined to be damaged, or faulty, is to be reported to the Engineer. Corrective action by the Contractor requires prior Engineer approval, retesting, and inspection.

F. Prior to testing and start-up, equipment and wiring shall be properly and permanently identified with nameplates, and other identification as specified in Section 3.7. Check and tighten terminals and connection points, remove shipping blocks and thoroughly clean equipment, repair damaged or scratched finishes, inspect for broken and missing parts and review and collect Manufacturer's drawings and instructions for delivery to the Engineer. Make routine checks and tests as the job progresses to ensure that wiring and equipment is properly installed.

G. Testing and checkout work is to be performed with fully qualified personnel skilled in the particular tests being conducted. Personnel are to have at least five (5) years of experience with tests of same type and size as specified.

H. Inspections and tests shall be in accordance with the following applicable codes and standards as amended to date, unless otherwise specified.

1. National Electrical Manufacturer's Association – NEMA.
2. American Society for Testing and Materials _ ASTM.
3. Institute of Electrical and Electronic Engineers – IEEE.
4. National Electrical Testing Association – NETA.
5. American National Standards Institute – ANSI.
   a. C2: National Electrical Safety Code.
   b. Z244-1: American National Standard for Personnel Protection.

6. Insulated Cable Engineers Association – ICEA.
7. Association of Edison Illuminating Companies – AEIC.
8. Occupational Safety and Health Administration – OSHA.
   a. OSHA Part 1910; Subpart S, 1910.308.
   b. OSHA Part 1926; Subpart V, 1926.950 through 1926.960.
9. National Fire Protection Association – NFPA.
   a. 70B: Electrical Equipment Maintenance.
   b. 70E: Electrical Safety Requirements for Employer Workplaces.
   c. 70: National Electrical Code.
   d. 78: Lightning Protection Code.
   e. 101: Life Safety Code.
10. Inspections and tests shall utilize the following references:
   a. Contract Drawings and Specifications.
   b. Contractor's Short Circuit and Construction Study, in accordance with Section 16100.
   c. Manufacturer's printed test procedures for respective equipment.

I. Test Equipment:

1. Test equipment used by the Contractor is to be inspected and calibrated.

2. Perform calibration and setting checks with calibrated test instruments of at least twice that of the accuracy of the equipment, device, relay or meter under test. Dated calibration labels shall be visible on test equipment. Calibrations over six (6) months old are not acceptable on field test instruments. Inspect test instruments for proper operation prior to proceeding with the tests. Record serial and model numbers of the instruments used on the test forms.

J. Test Procedures:

a. The Electrical Subcontractor is responsible for the preparation of the procedures and schedules for the work specified herein. This work is to be coordinated and compatible with both the work and schedule of the other crafts. Sequence the tests and checks so that the equipment can be energized immediately after the completion of the application tests.

b. Submit proposed testing and checkout forms. The procedures shall provide specific instructions for the checking and testing of each electrical component of each system. Schedule tests and inspections as the job progresses. Test procedures submitted shall include job safety rules.

K. After each electrical system installation is complete, perform the tests to determine that the entire system is in proper working order and in accordance with applicable codes, Manufacturer's instructions, drawings, and specifications. Tests are in addition to shop tests of individual items at the Manufacturer's plant. Perform insulation and ground resistance tests before operating tests.

L. Perform insulation tests on electrical equipment, apparatus, cables, motors, generators, transformers, circuit breakers and switches, switchgear, motor control centers, and similar electrical equipment, at the following items and conditions:

1. Prior to energization and/or placing into service.
2. When damage to the insulation is suspected or known to exist.
3. After repairs or modifications to the equipment affecting the insulation.
4. Where lightning or other surge conditions are known to have existed on the circuit.

M. Make openings in circuits for test instruments and place and connect instruments, equipment, and devices, required for the tests. Upon completion of tests, remove instruments and instrument connections and restore circuits to permanent condition.

N. List each circuit and measured resistance as test data. Maintain record of insulation resistance values. Identify conductor, or equipment, date that value was taken and resistance value. Arrange information in tabular form and submit to Engineer.

O. Report inspections, tests, and calibrations in writing on Engineer approved reports/forms. The recorded data form shall have the signatures of the persons conducting the tests, authorized witnesses and the Engineer. The forms shall serve as the test and inspection checklist.

P. When the electrical tests and inspections specified or required within Division 16 are completed and results reported, reviewed, and approved by the Engineer, the Contractor may consider that portion of the electrical equipment system or installation electrically complete. The Contractor will then affix appropriate, approved, and dated completion or calibration labels to the tested equipment and notify the Engineer of electrical completion. If the Engineer finds completed work unacceptable, he will notify the Contractor in writing of the unfinished or deficient work, with the reason for his rejection, to be corrected by the Contractor. The Contractor will notify the Engineer in writing when exceptions have been corrected. The Contractor will notify the Engineer in writing when exceptions have been corrected. The Contractor will prepare a "Notification or Substantial Electrical Completion" for approval by the Engineer following Engineer's acceptance of electrical completion. If later in-service operation or further testing identified problems attributable to the Contractor, these will be corrected by the Contractor, at no additional cost to the Authority.

Q. Specific Tests:

1. Perform the following specified tests. De-energize and isolate equipment and cable prior to performing the tests.

2. Motors:

   a. Before energizing any machine, visually inspect for serviceability. Check Manufacturer's instruction manual for correct lubrication and ventilation. Align motor with driven equipment. Check nameplate for electrical power requirements.

   b. Test run motors uncoupled or unloaded, before placing into operation. Check the motor for rotation, speed, current and temperature rise under normal load and record the results. Maintain the proper color codes for phase identifications. This may require swaps at the

motor for proper rotation. Use motor phase rotation meter prior to lead connection at motor in order to minimize later swaps.

3. Grounding Systems:

   a. Test main building loops and major equipment grounds to remote earth, directly referenced to an extremely low resistance (approximately 1 ohm) reference ground benchmark. Perform a visual inspection of the systems, raceway and equipment grounds to determine the adequacy and integrity of the grounding. Ground testing results shall be recorded, witnesses, and submitted to the Engineer.

   b. Perform ground tests using a low resistance, null-balance type ground testing ohmmeter, with test lead resistance compensated for. Use the type of test instrument which compensates for potential and current rod resistances.

   c. Test each ground rod and measure ground resistance. If resistance is not 25 ohms or less, drive additional rods to obtain a resistance of 25 ohms or less. Submit tabulation of results to Engineer. Include identification of electrode, date of reading and ground resistance valve in the test reports.

   d. Test each building and major equipment grounding system for continuity of connections and for resistance. Ground resistance of conduits, equipment cases, and supporting frames, shall not exceed 5 ohms to ground. Submit all readings to the Engineer.

   e. Where ground test results identify the need for additional grounding conductors or rods that are not indicated or specified, design changes will be initiated to obtain the acceptable values. The Contractor is responsible for the proper installation of the grounding indicated and specified.

4. Wire and Cable: (All conductors originating from main switchboard and distribution panels).

   a. Before energizing any cable or wire, megger the insulation resistance of every external circuit wire to each other and to ground. Tests shall be conducted at voltages of 500 volts or lower. Continuity test each wire and cable to verify the field-applied tag per conductor. Continuity test each wire and cable to verify the field-applied tag per conductor. Minimum insulation resistance valves shall not be less than two (2) megohms.

   b. Take insulation resistance measurements for motor feeders. With motors disconnected, measure insulation resistance from load side of contactors or circuit breakers.

   c. Check cables and wires for the proper identification numbering and/or color coding.

   d. Inspect cables for physical damage and proper connection in accordance with single line diagram.

5. Power Distribution System:

a. Main Switchboard:

b. Inspect for physical, electrical and mechanical condition.

c. Compare equipment nameplate information with latest single-line diagram and report discrepancies in writing to Engineer within 24 hours.

d. Check for proper anchorage, required area clearance, physical damage, and proper alignment.

e. Inspect all doors, panels and sections for paint, dents, scratches, fit and missing hardware.

f. Verify that fuse and/or circuit breaker sizes and types correspond to drawings. Report deviations to Engineer in writing within 24 hours.

g. Inspect all bus connections for high resistance. Use low resistance ohmmeter, or check tightness of bolted bus joints by calibrated torque wrench method. Refer to manufacturer's instructions for proper torque levels.

h. Clean entire switchgear using manufacturer's approved methods and materials prior to energizing system and a second time just prior to turning over system to Owner.

i. Inspect insulators for evidence of physical damage or contaminated surfaces.

j. Verify proper barrier and shutter installation and operation.

k. Verify appropriate contact lubricant on moving current carrying parts.

l. Exercise all active components.

m. Inspect all indicating devices for proper operation.

n. Perform ground resistance tests.

o. Perform insulation resistance tests on each bus section, phase-to-phase and phase-to-ground for one (1) minute. Test voltage shall be 1000 volts minimum, and insulation resistance shall be 100 megohms minimum.

p. Perform an over-potential test on each bus station, each phase-to-ground, for five (5) minutes at manufacturer's recommended potential. Test results are evaluated on a go, no-go basis by slowly raising the test voltage to the

required value. The final test voltage shall be applied for five (5) minutes for DC test potentials, and one (1) minute for AC test potentials.

6. (Not Used)

7. Circuit Breakers – Molded Case.

   a. Thoroughly clean unit.

   b. Circuit breaker shall be checked for proper mounting, conductor size and feeder designation.

   c. Operate circuit breaker to ensure smooth operation.

   d. Inspect case for cracks or other defects.

   e. Check tightness of connections with calibrated torque wrench. Refer to manufacturer's instruction for proper torque levels.

   f. Perform a contract resistance test or measure millivolt drop at rated current.

   g. Perform an insulation resistance test at 1000 volts DC for one (1) minute from pole-to-pole and from each pole-to-ground with breaker closed and across open contract in each phase – 500V DC if circuit breaker is solid state.

   h. Adjustable trip breakers shall have minimum pickup current determined by primary current injection where applicable.

   i. Perform long time delay time-current characteristic tests by passing 300% rated current through each pole separately. Determine trip time.

   j. Determine short time pickup and delay by primary current injection if applicable to the particular breaker.

   k. Determine ground fault pickup and time delay by primary current injection if applicable to the particular breaker.

   l. Determine instantaneous pickup currently by primary injection using run-up or pulse method. Clearing times shall be within four (4) cycles.

   m. Verify trip unit reset characteristics.

   n. Perform adjustments for final settings in accordance with breaker setting sheet if applicable to the particular breaker.

o. Compare contract resistance or millivolt drop valves to adjacent poles and similar breakers. Investigate deviations of more than 50%. Investigate any value exceeding Manufacturer's recommendations.

p. Insulation resistance shall not be less than 100 megohms.

q. Trip characteristics of adjustable trip breakers shall fall within Manufacturer's published time-current characteristic tolerance band.

r. All circuit breakers mounted in switchboards and distribution boards shall be time-current tested by primary current injection where possible, and also any remotely mounted breakers of frame size 400 ampere and larger.

s. Adjust settings and calibrate all circuit breakers as recommended in the short circuit analysis and coordination study.

8. (Not Used)

9. (Not Used):

10. Panelboards:

a. Inspect for physical damage and proper grounding.

b. Compare nameplate information with schedules and report any discrepancies.

c. Inspect all panelboards for cleanliness, workmanship, etc.

11. Low Voltage Systems: Include, but not limited to the following: Communication/telephone - cable/media - TV system.

a. Visually inspect all components for physical damage, dents, scratches and missing hardware.

b. Check all wiring for proper identification numbering and/or color coding.

c. Thoroughly clean all components.

d. Inspect all wiring for tightness of connections.

e. Operate and perform each of the system components and functions to verify system operation per plans and specs.

12. The following systems shall adhere to the general requirements of this section in addition

to complying with the specific test requirements outlined in the respective sections listed:

a. Fire Alarm System.
b. Intercom System.
c. Security System.

13. Operating Instructions: Furnish operating instructions to Owner's designated representative with respect to operations, functions and maintenance procedures for equipment and systems installed. Cost of such instruction up to a full five (5) days of Electrical Subcontractor's time shall be included in contract. Cost of providing a Manufacturer's Representative at site for instructional purposes shall also be included.

3.03 BRANCH CIRCUITRY

A. For all lighting and appliance branch circuitry, raceway sizes shall conform to industry standard maximum permissible occupancy requirements except where these are exceeded by other requirements specified elsewhere.

B. Circuits shall be balanced on phases at their supply as evenly as possible.

C. Feeder connections shall be in the phase rotation which establishes proper operation for all equipment supplied.

D. Reduced size conductors indicated for any feeders shall be taken as their grounding conductors.

E. Feeders consisting of multiple cables and raceways shall be arranged such that each raceway of the feeder contains one (1) cable for each leg and one (1) neutral cable, if any.

F. For circuitry indicated as being protected at 20 Amps or less, abide by the following:

1. All 20 amp, 120/208 volt, 3-phase, 4-wire combined branch circuit homeruns shall be provided with a #8 AWG neutral conductor.

2. Minimum conductor size shall be No. 12 AWG cooper.

3. Conductors operating at 120 volts extending in excess of 100 ft. or the last outlet or fixture tap shall be No. 10 AWG cooper throughout.

4. Lighting fixtures and receptacles shall not be connected to the same circuit.

5. Circuits shall be balanced on phases at their supply point as evenly as possible.

G. Type MC Cable Installation:

Where cable is permitted under the products section, the installation of same shall be done in accordance with code and the following:

Cable shall be supported in accordance with code. Tie wire is not an acceptable means of support. Cable supports such as Caddy WMX-6, MX-3, and clamps such as Caddy 449 shall be used. Where cables are supported by the structure and only need securing in place, then ty-raps will be acceptable. Ty-raps are not acceptable as a means of support. All fittings, hangers, and clamps for support and termination of cables shall be of type specifically designed for use with cable, i.e., romex connectors not acceptable.

Armor of cable shall be removed with rotary cutter device equal to roto-split by Seatek Co.; not with a hacksaw.

Use split "Insuliner" sleeves at terminations.

3.04 REQUIREMENTS GOVERNING ELECTRICAL WORK IN DAMP OR WET LOCATIONS

A. Outlets and outlet size boxes shall be of galvanized cast ferrous metal only.

B. The finish of threaded steel conduit shall be galvanized only.

C. Wires for pulling into raceways for lighting and appliance branch circuitry shall be limited to "THWN".

D. Wires for pulling into raceways for feeders shall be limited to "THWN".

E. Plates for toggle switches and receptacles shall have gasketed snap shut covers suitable for wet locations while in use.

F. Final connections of flexible conduit shall be neoprene sheathed.

G. Apply one (1) layer of half looped plastic electric insulating tape over wire nuts used for joining the conductors of wires.

H. Enclosures, junction boxes, pull boxes, cabinets, cabinet trims, wiring troughs and the like, shall be fabricated of galvanized sheet metal, shall conform to the following:

1. They shall be constructed with continuously welded joints and seams.

2. Their edges and weld spots shall be factory treated with cold galvanizing compound.

3. Their connection to circuitry shall be by means of watertight hub connectors with sealing rings.

I. Enclosures for individually mounted switching and overcurrent devices shall be NEMA Class IV weatherproof construction.

J. The covers, doors and plates and trims used in conjunction with all enclosures, pull boxes, outlet boxes, junction boxes, cabinets and the like shall be equipped with gaskets.

K. Panels shall be equipped with doors without exception.

L. The following shall be interpreted as damp or wet locations within building confines:

1. Spaces where any designations indicating weatherproof (WP) or vapor proof appear on the drawings.

2. Below waterproofing in slabs applied directly on grade.

3. Spaces defined as wet or damp locations by Article 100 of the National Electric Code.

3.05 UNDERGROUND CONDUIT BANKS

A. The electrical work required in conjunction with underground conduit banks shall include providing all conduits.

B. Conduits for underground banks shall be:

1. Trade diameter size as indicated but in no case less than one inch.

2. Polyvinyl chloride Schedule 40 (approved for encased burial) duct, rigid steel conduit for vertical elbows and straight sections used to penetrate equipment pads, building foundation walls and concrete slabs.

C. All conduits indicated as being incorporated into conduit banks unless specifically noted as rigid steel conduits shall be encased in a concrete envelope which accommodates the indicated configuration of conduits and which encompasses dimensions as follows:

1. Outside surfaces of conduits to outside surface of envelope where reinforcement of encasement is required – 6” minimum.

2. Outside surfaces of conduits to outside surface of envelope where no reinforcement of encasement is required – 3” minimum.

3. Spacing between centerlines of conduits assigned to different categories of use primary feeders, secondary feeders, communications and signaling – 10-1/2” minimum.

4. Spacing between centerlines of conduits assigned to the same category of use – 7-1/2” minimum.

D. Reinforcement of the concrete encasement for conduit banks where required shall consist of No. 4 longitudinal reinforcing bars located 3” from the outside surface of the envelope and spaced 6” on centers all around. No. 8 wire reinforcing hoops set 8” apart shall be used to tie the longitudinal bars together.

E. Install conduit in such a manner as to provide a minimum cover of 30 inches after final grading except the cover may be reduced to a minimum of 18 inches to:

   1. Tie into existing work.

   2. Pass over other underground utilities.

   3. Pass over underground obstructions.

   4. Assist in the avoidance of low points.

F. Increase the minimum cover where required by field conditions.

G. Lay conduit to avoid low points during run. Pitch at a minimum of 3 inches per 100 feet away from building.

H. Provide reinforcement for the concrete encasement of a conduit bank where:

   1. It passes under or over underground utilities.

   2. It passes under or over underground obstructions.

   3. Its cover is reduced to less than 30 inches.

   4. It runs through foundation walls and other building construction.

I. Concrete encasement reinforcing shall extend in each case 5 feet beyond the points at which the determining conditions terminate.

J. Bends in conduit shall have minimum radii as follows:

   1. For primary feeder 15’-0” except where specifically indicated otherwise or where turning up at termination point.

   2. For primary feeder turning up at termination point – 4’-0”.

K. Install conduit so that adjacent joints are staggered at least 6 inches from one another.

L. Offsets to accommodate field conditions shall be accomplished with two (2) bends of not more than ten (10) degrees each.

M. Plug both ends of all conduit stubs.

N. Seal the end of each conduit run terminating inside a building utilizing a water and gas-tight sealant manufactured specifically for the purpose.

O. After conduit has been installed with concrete encasement completed, clear each conduit of all obstructions and foreign matter by pulling a flexible mandrel (12” minimum length and a diameter 1/4" less than that of the conduit) and brush through it. In the event that obstructions are encountered in any conduit which will not permit the mandrel to pass, remove and replace the blocked section. Include in the electric work all excavation, backfilling, repair of concrete encasement and restoration of surface at grade involved in the conduit replacement.

P. Provide a nylon cord for the pulling of cable in each conduit in which no cable is to be installed as part of the electric work.

Q. The Electrical Sub-Contractor shall provide all insulated racks as required for proper support of all cables and wires.

R. Provide a continuous nylon warning tape above each full length of duct bank 12 inches below grade.

3.06 IDENTIFICATION AND TAGGING

A. Identify individually:

1. Each transformer.

2. Each panelboard.

3. Each switch and circuit breaker.

4. Each feeder, wire or cable or all systems.

5. Each switchboard.

6. Each end of nylon pullwire in empty conduit.

B. Each wire or cable in a feeder shall be identified at its terminal points of connection and in each pullbox, junction box and panel gutter through which it passes.

C. The nomenclature used to identify panelboards or load center shall designate the numbers assigned to them.

D. The nomenclature used to identify switches or circuit breakers shall:

1. Where they disconnect mains or services designate this fact.

2. Where they control feeders, designate the feeder number and the name of the load supplied.

3. Where they control lighting and appliance branch circuitry, designate the name of the space and the load supplied.

E. The nomenclature used to identify feeder wires and cables shall designate the feeder number.

F. Identification for panelboards or load centers shall be by means of engraved lamacoid nameplates showing 1/4" high white lettering on a black background fastened to the outside face of the front.

G. Identification for switches or circuit breakers shall be by means of the following:

1. Where individually enclosed – engraved lamacoid nameplates showing 1/8” high white lettering on a black background fastened on the outside front face of the enclosure.

2. Where in panelboards or load centers without doors – same as for individually enclosed.

3. Where in panelboards or load centers with doors – typewritten directories mounted behind transparent plastic covers, in metal frames fastened on the inside face of the doors.

H. Identification for wires and cables shall be by means of wrap around “brady” type labels.

I. Device plates for local toggle switches, toggle switch type motor starters, pilot lights and the like, whose function is not readily apparent shall be engraved with 1/8” high letters suitably describing the equipment controlled or indicated.

J. Phase identification letters shall be stamped into the metal of the bus bars of each phase of the main busses of each switchboard and each panelboard. The letters shall be visible from at least one (1) “normal posture” location without having to demount any current carrying or supporting elements.

K. Equip the front face of all switchboard pull boxes junction boxes and the like containing cables, busing or devices operating in excess of 600 volts with enameled sheetmetal “red on white” signs reading “DANGER-HIGH VOLTAGE.”

L. Equip all electric closets and the like with enameled sheet metal “red on white” signs reading “Electrical Equipment Room – No Storage Permitted”. Signs shall be mounted at clearly visible locations within the rooms.

M. Provide a sign at the service entrance equipment room indicating the type and location of all on-site emergency or standby power sources.

N. Identify each outlet box, junction box, and cabinet used in conjunction with empty raceway for wires of a future system by means of indelible markings on the inside denoting the system.

O. Prior to installing identifying tags and nameplates, submit their nomenclature for approval. Conform to all revisions issued by the Architect.

3.07 LIMITING NOISE PRODUCED BY ELECTRICAL INSTALLATION

A. Perform the following work, in accordance with field instructions issued by the Architect to assure that minimal noise is produced by electrical installations due to equipment furnished as part of the electrical work.

B. Check and tighten the fastenings of sheet metal plates, covers, doors and trims used in the enclosures of electrical equipment.

C. Remove and replace any individual device containing one or more magnetic flux path metallic cores (e.g., discharge lamp ballast, transformer, reactor, dimmer, solenoid) which is found to have a noise output exceeding that of other identical devices installed at the project.

3.08 SUPPORTS AND FASTENINGS

A. Support work in accordance with best industry standards, Local Electric Code and the following:

1. Include supporting frames or racks for equipment, intended for vertical surface mounting, which is required in a free standing position.

2. Supporting frames or racks shall be of standard angle, standard channel or specialty support system steel members. They shall be rigidly bolted or welded together and adequately braces to form a substantial structure. Racks shall be of ample size to assure a workmanlike arrangement of all equipment mounted on them.

3. No work intended for exposed installation shall be mounted directly on any building surface. In such locations, flat bar members or spaces shall be used to create a minimum of ¼” air space between the building surfaces and the work. Provide ¾” thick exterior grade plywood painted with two (2) coats of fire-retardant gray paint for mounting of panelboards.

4. Nothing (including outlet, pull and junction boxes and fittings) shall depend on electric conduits, raceways or cables for support.

5. Nothing shall rest on, or depend for support on, suspended ceiling media.

6. Support less than 2” trade size, vertically run, conduits at intervals no greater than 8’. Support such conduits, 2-1/2” trade size or larger, at intervals no greater than they story height, or 15’, whichever is smaller.

7. Where they are not embedded in concrete, support less than 1” trade size, horizontally run, conduits at intervals no greater than 7’. Support such conduits, 1” trade size or larger, at intervals no greater than 10’.

8. Support all lighting fixtures directly from structural slab, deck or framing member.

9. Where fixtures and ceilings are such as to require fixture support from ceiling openings frames, include in the electric work the members necessary to tie back the ceiling opening frames to ceiling suspension members or slabs so as to provide actual support for the fixtures noted above.

10. As a minimum procedure, in suspended ceilings support smalls runs of circuitry (e.g., conduit not in excess of 1" trade size) from ceiling suspension members as defined above. Support larger runs of circuitry directly from structural slabs, decks or framing members.

11. Fasten electric work to building structure in accordance with the best industry practice.

12. Floor mounted equipment shall not be held in place solely by its own dead weight. Include floor anchor fastenings in all cases.

13. For items which are shown as being ceiling mounted at locations where fastenings to the building construction element above is not possible, provide suitably auxiliary channel or angle iron bridging tying to building structural elements.

14. As a minimum procedure, where weight applied to the attachment points is 100 lbs. or less, fasten to concrete and solid masonry with bolts and expansion shields.

15. As a minimum procedure, where weight applied to building attachment points exceed 100 lbs., but is 300 lbs. or less, conform to the following:

    a. At field poured concrete slabs, utilize inserts with 20' minimum length slip-through steel rods, set transverse to reinforcing steel.

3.09 SPLICING AND TERMINATING WIRES AND CABLES

A. Maintain all splices and joints in removable cover boxes or cabinets where they may be easily inspected.

B. Locate each completed conductor splice or joint in the outlet box, junction box, or pull box containing it, so that it is accessible from the removal cover side of the box.

C. Join solid conductors No. 8 AWG and smaller by securely twisting them together and soldering, or by using insulated coiled steel spring "wire nut" type connectors. Exclude "wire nuts" employing non-expandable springs. Terminate conductors No. 8 AWG and smaller by means of a neat and fast holding application of the conductors directly to the binding screws or terminals of the equipment or devices to be connected.

D. Join, tap and terminate standard conductors No. 6 AWG and larger by means of solder sleeves, taps, and lugs with applied solder or by means of bolted saddle type or pressure indent type connectors, taps and lugs. Exclude connectors and lugs of the types which apply set screws directly to conductors. Where equipment or devices are equipped with set screw type terminals which are impossible to change, replace the factory supplied set screws with a type having a ball bearing tip. Apply pressure indent type connectors, taps and lugs utilizing tools manufactured specifically for the purpose and having features preventing their release until the full pressure has been exerted on the lug or connector.

E. Except where wire nuts are used, build up insulation over conductor joints to a value, equal both in thickness and dielectric strength, to that of the factory applied conductor insulation. Insulation of conductor taps and joints shall be by means of half-lapped layers of rubber tape, with an outer layer of friction tape; by means of half-lapped layers of approved plastic electric insulating tape; or by a means of split insulating casings manufactured specifically to insulate the particular connector and conductor, and fastened with stainless steel or non-metallic snaps or clips.

F. Exclude splicing procedures for neutral conductors in lighting and appliance branch circuitry which utilize device terminals as the splicing points.

G. Exclude joints or terminations utilizing solder in any conductors used for grounding or bonding purposes.

H. Exclude all but solder or pressure indent type joints in conductors used for signaling or communication purposes.

I. Lugs for conductors used to make phase leg connections on the line side of the main service overcurrent and switching device shall be of the limiter type.

3.10 PULLING WIRES INTO CONDUITS AND RACEWAYS

A. Delay pulling wires or cables in until the project has progressed to a point when general construction procedures are not liable to injure wires and cables, and when moisture is excluded from raceways.

B. Utilize nylon snakes or metallic fish tapes with ball type heads to set up for pulling. In raceways 2” trade size and larger, utilize a pulling assembly ahead of wires consisting of a suitable brush followed by a 3-1/2” diameter ball mandrel.

C. Leave sufficient slack on all runs of wire and cable to permit the secure connection of devices and equipment.

D. Include circular wedge-type cable supports for wires and cables at the top of any vertical raceway longer than 20 feet. Also include additional supports spaced at intervals which are no greater than 10’. Supports shall be located in accessible pull boxes. Supports shall be of a non-deteriorating insulating material manufactured specifically for the purpose.

E. Pulling lubricants shall be used. They shall be products manufactured specifically for the purpose.

F. Slack on wires and cables located in cabinets and pull boxes shall be formed and set in place in groupings corresponding to their occupancy of raceways. They shall also be arranged, with insulators and supports provided where necessary, such that cable shims or other such temporary expedients do not have to be left permanently in place to prevent the wires and cables from shifting when covers or trims are removed.

3.11 REQUIREMENTS FOR THE INSTALLATION OF JUNCTION BOXES, OUTLET BOXES AND PULL BOXES

A. Flush wall-mounted outlet boxes shall not be set back to back but shall be offset at least 12" horizontally regardless of any indication on the drawings.

B. Locate all boxes so that their removable covers are accessible without necessitating the removal of parts of permanent building structure, including piping, ductwork, and other permanent mechanical elements.

C. In conjunction with concealed circuitry, abide by one of the following instructions (as may be applicable to the conditions) in order to assure the aforementioned accessibility. (Not required for circuitry concealed by removable suspended ceiling tiles.)

1. For a small (outlet size) box on circuitry concealed in a partition or wall, locate box or fitting so that its removable cover side, (or the face of any applied raised cover) penetrates through to within 1/8" of the exposed surface of the building materials concealing the circuitry and apply a blank or device plate to suit the functional requirements.

2. For a large box on circuitry concealed in a partition, suspended ceiling, or wall, locate box totally hidden but with its removable cover directly behind an architectural access door or panel (included for the purpose, separate from the electric work) in the building construction which conceals the circuitry.

3. For a small (outlet size) box on circuitry concealed above and intended as an outlet for a surface mounted lighting fixture or other such electrical item, locate box so that its removable cover side penetrates through to the exposed surface of the building materials concealing the circuitry. Arrange the mounting of the lighting fixture or other item so that it completely covers the opening in the building construction caused by the box.

4. For a small (outlet size) box on circuitry concealed in a suspended ceiling, and intended as an outlet for a non-demountable type of recessed lighting fixtures or other such electrical items, locate box totally hidden but with its removable cover not more than 1' away from the building construction opening occupied by the demountable items.

D. Apply junction and pull boxes in accordance with the following:

1. Include all pull boxes in long straight runs of raceway to assure that cables are not damaged when they are pulled in.

2. Include junction and pull boxes to assure a neat and workmanlike installation of raceways.

3. Include junction and pull boxes to fulfill requirements pertaining to the limitations to the number of bends permitted in raceway between cable access points, the accessibility of cable joints and splices, and the application of cable supports.

4. Include all required junction and pull boxes regardless of indications on the drawings (which, due to symbolic methods of notation, may omit to show some of them).

E. Apply outlet boxes in accordance with the following:

1. Unless noted below or otherwise specifically indicated, include a separate outlet box for each individual wiring device, lighting fixture and signal or communication system outlet component. Outlet boxes supplied attached to lighting fixtures shall not be used as replacements for the boxes specified herein.

2. A continuous row of fixtures of the end-to-end channel type, designed for "through wiring", and wired in accordance with the specification hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.

3. A series of separate fixtures, designed for "through wiring", spaced not more than 4' apart, and inter-connected with conduit or raceway and circuitry which is in accordance with the specifications hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.

4. Connection to recessed ceiling fixtures supplied with pigtails may be arranged so that more than one (1), but not more than four (4) such fixtures are connected into a single outlet box. When adopting this procedure:

   a. Utilize an outlet box no smaller than 5" square by 2-1/2" deep.
   b. Allow no fixture to be supplied from an outlet box in another room.

5. Multiple local switches indicated at a single location shall be gang-mounted in a single outlet box.

6. Include all required outlet boxes regardless of indications on the drawings (which due to symbolic methods of notation, may omit to show some of them).

F. Install junction boxes, pull boxes and outlet boxes in conjunction with concealed circuitry.

1. Exclude surface-mounted outlet boxes in conjunction with concealed circuitry.

2. Exclude unused circuitry openings in junction and pull boxes. In larger boxes each such opening shall be closed with a galvanized sheet steel plate fastened with a continuous weld all around. In small outlet type boxes, utilize plugs as specified for such boxes.

3. Close up all unused circuitry openings in outlet boxes. Unused openings in cast boxes shall be closed with approved cast metal threaded plugs. Unused openings in sheet metal boxes shall be closed with sheet metal knock-out plugs.

4. Outlet boxes for switches shall be located at the strike side of doors. Indicate door swings are subject to field change. Outlet boxes shall be located on the basis of final door swing arrangements.

5. Boxes and plaster covers for duplex receptacles shall be arranged for vertical mounting of the receptacle.

6. Equip outlet boxes used for devices which are connected to wires of systems supplied by more than one set of voltage characteristics with barriers to separate the different systems.

G. Barriers in junction and pull boxes of outlet size shall be of the same metal as the box.

H. Barriers in junction and pull boxes which are larger than outlet size shall be of the polyester resin fiberglass of adequate thickness for mechanical strength, but in no case less than 1/4" thick. Each barrier shall be mounted, without fastenings, between angle iron guides so that they may be readily removed.

3.12 LOCATING AND ROUTING OF CIRCUITRY

A. In general, all circuitry shall be run concealed except that it shall be run exposed where the following conditions occur:

1. Horizontally at the ceiling of permanently unfinished spaces which are not assigned to mechanical or electrical equipment.

2. Horizontally and vertically in mechanical equipment spaces.

3. Horizontally and vertically in electric equipment rooms.

B. Concealed circuitry shall be so located that building construction materials can be applied over its thickest elements without being subject to spalling or cracking.

C. All circuitry and raceways shall not be run within slabs. If field conditions requires raceways to be embedded in field-poured structural building construction concrete fill or slab shall conform to the following:

1. All proposed embedded raceways shall be indicated on plan and elevation and submitted to the Architect and Structural Engineer for review and written approval prior to installation. Any costs associated with the review and approval shall be borne by the Electrical Subcontractor.

2. They shall be run “single layer” with their outside surface no closer than 1” to any surface of the structural concrete.

3. They shall not be located in any configuration which places the outside surface of one closer than 3” to outside surface of another, except at tees, crosses or other single level wide angle junction points.

4. Where crossovers or close grouping are unavoidable, circuitry shall be carefully field coordinated so as not to cause structural weakness.

5. Where turned up or down into a wall or partition they shall, before entering same, be routed parallel for a long enough distance to assure that no relocation of the wall or partition will be necessary to conceal the required bend.

6. They shall be routed in such a manner as to coordinate with the structural requirements of the building.

7. They shall be routed in accordance with field instructions issued by the Architect where such instructions differ from specifications set forth herein.

D. Circuitry run exposed shall be routed parallel to building walls and column lines.

E. Exposed circuitry located overhead shall be run in a completely accessible manner on the underside of all piping and ductwork.

F. Circuitry run in suspended ceilings shall be routed parallel to building walls, column lines, etc.

G. Circuitry shall be routed so as to prevent electric conductors from being subject to high ambient temperature. Minimum clearances from heated lines or surfaces shall be maintained as follows:

1. Crossing where uninsulated: 3”.

2. Crossing where insulated: 1”

3. Running parallel where uninsulated: 36”.

4. Running parallel where insulated: 6”.

H. Circuitry shall not be run in elevator shafts, hoistways, and the like. Where outlets for trail cables, pit lights, run be level lights, and the like, are involved, only the “final connection” outlet boxes themselves shall be located within or open into, the confines of the shaft.

I. Circuitry for miscellaneous systems indicated without notation as to location and routing shall be run as per the requirements and notations governing the adjacent light and power circuitry.

3.13 INSTALLING CIRCUITRY

A. The outside surface of circuitry, which is to be embedded in cinder concrete, shall be coated with asphaltum paint.

B. In runs of conduit or raceway including flexible limit the number of bends between cable access points to a total which does not exceed the maximum specified for the particular system. Where no such maximum is specified, limit the number to four (4) right angle bends or the equivalent thereof.

C. In each conduit or raceway assigned for the future pulling in of wires, include a nylon drag cord. In raceways 2" trade size and larger, the cord shall be pulled in utilizing a suitable brush, followed by an 85% diameter ball mandrel ahead of the cord in the pulling assembly. In the event that obstructions are encountered, which will not permit the drag cord to be installed, the blocked section of raceway shall be replaced and any cutting and patching of the structure involved in such replacement shall be included as part of the electric work.

D. Circuitry shall be arranged such that conductors of one feeder or circuitry carrying "going" current are not separated from conductors of the same feeder or circuitry carrying "return" current by any ferrous or other metal. Where not within raceways, all "going" and "return" current conductors of one feeder or circuit shall be laced together so as to minimize induction heating of adjacent metal components.

E. Sleeves used where circuitry is to penetrate waterproof slabs, decks and walls, shall be of a type selected to suit the water condition encountered in the field.

END OF SECTION

SECTION 32 92 00
SOIL PREPARATION FOR LAWN ESTABLISHMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 31 00 00 – Earthwork
2. Section 32 92 20 – Seeding for Lawn Establishment

1.2 DESCRIPTION OF WORK

A. Provide all materials, equipment and labor necessary to complete the work as indicated on the drawings or as specified herein.

B. The principal work of this section includes, but may not be limited to, the following:
1. Loam from off-site, if on-site is insufficient.
2. Grading and Spreading Loam.
3. Preparations of Areas for Seeding.
4. Application of Limestone.
5. Application of Lawn Starter Fertilizer.
6. Application of Turf Maintenance Fertilizer.
7. Applying Jute Mesh.

1.3 QUALITY ASSURANCE

A. Contractor shall specialize in work outlined with a minimum of five (5) years experience on similar projects.

B. Do not make substitutions without written approval. If specified materials are not available, obtain approval for substitution from the Owner's Representative.

C. All fertilizer applications shall be performed by a licensed applicator in strict conformance with all local, state and federal regulations. Notify the Owner’s Project Representative at least two weeks prior to scheduled application.

1.4 SUBMITTALS

A. At least 30 days to ordering material, the Contractor shall submit to the Architect representative samples, manufacturer’s product data, source of off-site loam to be provided, and certified test

results for materials as specified below. Certification shall list soil additives to loam including rates and type.

B. Existing On-Site loam: Sample and test existing on-site loam. The Contractor shall sample the existing loam soils from the construction site with the following requirements:

1. The contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard on-site stockpile of existing loam for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes.

2. Preparation of Samples: Contractor shall place these soil slices into a large, clean plastic container and mix thoroughly. Contractor shall take one cup of soil mixture and dry it room temperature (do not dry samples in an oven or on a stove or radiator). Once soil is dry, place soil in sandwich size type plastic bag and close. Label each sample on outside of bag, identifying sample by soil type and acre.

C. Loam from off-site, if on-site is insufficient: The Contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard proposed stockpile of loam borrow for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes.

D. All testing shall be at the expense of the contractor. Contractor shall deliver samples to the testing facility and have the results forwarded to the Architect. Perform all tests for gradation, organic content, soil chemistry and pH. Testing reports shall include the following tests and recommendations:

1. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System.
2. Chemical Analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Lead, Zinc, Soluble Salts, extractable Aluminum, Cadmium, Copper, pH and buffer pH. Except where otherwise noted, nutrient tests shall be for available nutrients.
3. Soil analysis tests shall show recommendations for soil additives to correct soils to meet the specifications and for additives necessary to accomplish lawn and planting work as specified.

E. Compost: Submit supplier’s certification of contents.

F. Certification and/or labels of proposed soil additives stating names of each.

1.5 DEFINITIONS

A. The following definitions shall apply to the work of this section.

The following size distributions of mineral particles by diameter and sieve size shall apply to the following conventional names of soil types:

Conventional Name	Retained on US Sieve No.	Diameter (mm)
Very Coarse Sand	#18	1-2
Coarse Sand	#35	0.5-1
Medium Sand	#60	0.25-0.5
Fine Sand	#140	0.10-0.25
Very Fine Sand	#270	0.05-0.10
Silt	by hydrometer	0.002-0.05
Clay	by hydrometer	Less than 0.002

1.6 PRODUCT DELIVER, STORAGE AND HANDLING

A. Protect all products from weather vandalism or other damaging or deteriorating conditions.

PART 2 - PRODUCTS

2.1 CLEAN SCREENED LOAM

A. Loam shall consist of screened fertile, loose, friable fine sandy loam or sandy loam free of subsoil, refuse, stamps, roots, rocks, cobbles, stones, brush, noxious weeds, litter and other materials which are larger than one inch (1”) in any dimension and which will prevent healthy plant growth.

B. Loam shall be one of the following sandy loams: “coarse sandy loam”, “sandy loam”, “fine sandy loam” based on the USDA Classification System determined by mechanical analysis ASTM D-422. It shall be uniform in composition, without admixture of subsoil. The loam shall possess good filtration and permeability rates, and shall possess a mechanical analysis where:

	Percent Passing By Weight	
Millimeter	Max.	Min.
2	---	100
1	100	80
0.5	87	67
0.25	78	48
0.10	68	30
0.05	55	22
0.02	7	2

1. One hundred percent shall pass a one inch sieve opening, and the maximum retained on the quarter inch sieve shall be 20 percent by weight of the total sample.

2. On-site and off-site loam shall be screened to achieve the above specified sieve analysis.

C. Organic Content and pH: Loam shall contain not less than 6% or more than 10% organic matter

determined by wet combustion method on sample dried at 105 degrees C. Acidity range shall be pH 6 to 7 in seeded areas when tested according to methods of testing or A.O.A.C.

1. Loam Borrow shall be pH adjusted for particular planting applications and shall be adjusted prior to delivery to the project site.

    a. When pH of loam borrow is equal to or greater than 7 use aluminum sulfate to adjust pH to required levels.

    b. When pH of loam borrow is less than 7 use either sulfur or ferrous sulfate to adjust pH to required levels.

D. The loam borrow must not be handled or moved when in wet or frozen conditions.

E. Loam shall be uncontaminated by salt water, foreign matter and substances harmful to plant growth. Topsoil shall not have extractable aluminum greater than 200 parts per million unless otherwise noted. Cation Exchange Capacity (CEC) shall be between 10 and 15.

2.2 SOIL ADDITIVES

A. Dolomitic Limestone: contain up to 50% magnesium carbonate in a dry, granular form. Limestone shall be ground to such a fineness that at least 50% will pass through a 100-mesh sieve and 90% to 100% will pass through a 20-mesh sieve.

B. Aluminum Sulfate: shall be unadulterated, 57%.

C. Lawn Starter and Maintenance Fertilizer:

1. Fertilizer shall be Organic-based and be OMRI (Organic Materials Review Institute) Certified

2. Complete fertilizer in granular form, from commercial sources bearing manufacturer's analysis; 2-3-3 ratio of N-P-K.

    a. Total Nitrogen (N) – 2.0%
    b. 0.8% - Water Soluble Nitrogen
    c. 1.2% - Water Insoluble Nitrogen
    d. Available Phosphate (P2O5) – 3.0%
    e. Soluble Phosphate (K2O) – 3.0%

3. Application Rate: Apply 2-3 pounds per 100 square feet

D. Sand: Shall be clean, course, ungraded material meeting ASTM C33 requirements for masonry sand.

E. Humus: Shall be natural humus, free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. The acidity range shall be approximately 5.5

pH to 7.5 pH and the organic matter shall not be less than 85% as determined by loss on ignition. The minimum water absorbing ability shall be 200% by weight on an oven-dry basis.

F. Bone Meal: shall be fine ground, steam cooked, packing house bone with a minimum analysis of 23% phosphoric acid and 4% nitrogen.

G. Gypsum: shall be agricultural grade, granular form. Gradation shall conform to the following:

Sieve Designation	Percent Passing By Weight
No. 8 (2.36mm)	100
No. 16 (1.18mm)	97
No. 30 (0.60mm)	82
No. 50 (0.30mm)	46
No. 100(0.15mm)	21

H. Jute Mesh: Jute mesh shall be uniform, open, plain weave of undyed and unbleached single jute yarn, a minimum of four (4) feet in width plus or minus one (1) inch. There shall be 78 warp ends per width and 41 weft ends per yard. Weight shall average 1.22 pounds per linear yard, plus or minus 5%. Staples for Erosion Control Materials: 9 gauge staples shall be used with jute mesh: 11 gauge with woven paper.

2.3 WATER

A. Clean, fresh potable water.

PART 3 - EXECUTION

3.0 GRADING AND SPREADING LOAM

A. Remove all debris and other inorganic materials on any prepared subgrades, and reshape and dress any damaged or eroded slopes, swales, and other areas. Scarify and loosen subgrade to a friable condition in any areas where compaction may have occurred. Loam shall not be placed until subgrade is in suitable condition and free of excessive moisture or frozen materials.

B. Loam shall be spread as required on all disturbed and bare areas to produce a total depth of 6" as shown on the plan. Fill all depressions in existing grades with suitable fill material as specified in Section 31 00 00 prior to spreading loam, then shape and finish grade to depth of loam required.

C. Area shall be progressively fine graded and machine and hand raked, with loam added as required to correct depressions and other irregularities, to produce smooth and unbroken finish grades and the depth of loam required.

D. Drawings show grading design intent to achieve a uniform grade not less than 1.25% slope. Finish

grades shall conform to lines, grades, sections, and shapes of lawn areas as required. Provide positive drainage. Provide smooth, uniform, rounded transitions at all changes and break in grade. Loam is to be consistent depth of 1/2" below adjacent pavements surfaces.

E. Starter fertilizers: All required materials shall be spread and distributed into the soil at rates and amounts specified herein.

F. After establishment of finish grade, entire area shall be hand raked and rolled using a light roller.

3.1 PREPARATION OF AREAS FOR SEEDING

A. GENERAL DESCRIPTION: This work shall consist of the preparation of the seed bed. Work shall be done as described herein:
1. Areas shall be finely raked to a finished grade. Substantially, all sticks, litter, wire, weeds, cable or stones larger than one (1") inch in greater dimension shall be removed and disposed of as directed.
2. Where the soil has become compacted, prior to fine raking, areas to be seeded shall be scarified by discing, york raking, or other approved method to a minimum depth of two (2) inches.
3. No seeding will be permitted on areas where the seed bed has not been properly prepared or where the soil is compacted.
4. Request inspection of the work for approval before proceeding with seeding.

3.2 APPLICATION OF LIMESTONE

A. When applied dry, limestone shall be spread evenly and incorporated thoroughly into the soil by discing or other approved means.

B. When applied hydraulically, no discing will be necessary.

C. Granular treatment to be applied at the rate of 25 to 50 lbs. per 1,000 square feet or as required by soil pH test to produce a pH of 6.0 to 6.5.

3.3 APPLICATION OF STARTER AND MAINTENANCE FERTILIZER

A. One application of turf maintenance fertilizer will be required before final acceptance of seeded areas.

B. Fertilizer shall be Organic-based and be OMRI (Organic Materials Review Institute) Certified

C. Application Rate: Apply 2-3 pounds per 100 square feet.

D. Fertilizer shall be applied at a time, which shall be requested in writing by the Contractor, and approved in writing by the Owner’s representative.

3.4 APPLYING JUTE MESH

A. Apply jute mesh loosely but smoothly to fit the contour of the finished grade, parallel to and in same direction as the flow of water. The up-slope end of the each separate strip or piece of jute mesh shall be buried in a six (6) inch minimum vertical anchor slot of junction slot with the soil tamped firmly against the mesh. Where more than one width of material is required, edges shall overlap a minimum of twelve (12) inches, and the up-slope section of mesh will be on top. Down-hill ends of the jute mesh shall be folded under approximately four (4) inches and stapled in place. Staples will be inserted through the mesh along edges, overlaps, and in the center of all jute mesh strips at intervals not greater than three (3) feet. All anchor slots, junction slots, check slots, and terminal folds shall have five (5) staples spaced not more than nine (9) inches on center across widths.

B. On seeded banks, jute shall be applied immediately after seeding. On shrub banks, apply jute after finish grading. Cut openings in mesh for each plant and plant and mulch as specified.

END OF SECTION

SECTION 32 92 20
SEEDING FOR LAWN AREAS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 32 92 00, Soil Preparation for Lawn Establishment

1.2 DESCRIPTION OF WORK

A. Provide all materials, equipment, and labor necessary to complete the work as indicated on the drawings or as specified herein.

B. The principal work of this section includes, but may not be limited to, the following:
1. Application of seed.
2. Application of weed control.
3. Maintenance of seeded areas.
4. Acceptance of seeding.

C. In general, seeded areas shall, at a minimum, include all areas of site within project limit lines that have been disturbed or are barren unless otherwise noted on the plans. Overseeding of established lawn areas, if required on plans, shall also extend to the limit of disturbance (LOD), unless otherwise noted.

1.3 QUALITY ASSURANCE

A. Subcontract seeding work to a firm specializing in such work unless Contractor is fully experienced and qualified.

B. Each seed bag or container shall display a label which identifies the contents as a true representation of the seed mix and percentages required by specification. No seed shall be applied to a site until the Owner's representative has determined the mixture meets all requirements.

C. Do not make substitutions without written approval. If specified seed mixes are not available, obtain approval for substitution from the Owner's representative.

1.4 SUBMITTALS

A. Certifications and/or labels of proposed seed mixtures stating common and scientific names of grasses, percentages by weight, and percentages of purity and germination.

B. Product information of all proposed weed control chemicals.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect all products from weather or other damaging or deteriorating conditions.

B. Seed mixes which have been damaged or have deteriorated in transit or storage are not acceptable.

C. Seeding Schedule: Prepare a proposed seeding schedule. Schedule dates for each type of landscape work during normal seasons for such work.

Seeding: March 15 - June 30
August 15 - October 15

D. Correlate with specified maintenance periods to provide maintenance to date of acceptance. Once the schedule is accepted, dates shall be revised and submitted in writing for reasons of delay.

1.6 WARRANTY

A. Warranty seeding until final acceptance of grass stand.

1.7 MAINTENANCE

A. Maintenance of seeding to be performed by the installer to ensure plant survival (85%) and to eliminate undesirable species and includes:
1. Watering;
2. Regrading and replanting eroded areas; and
3. Seeding or patching sparse or bare areas.
4. Debris removal
5. Replacement of damaged or dead material

B. Maintain seeded areas immediately after placement until grass is accepted.

PART 2 - PRODUCTS

2.1 SEED

A. General: Pure, live, fresh seed from commercial sources meeting and labeled in accordance with State and Federal laws, rules and regulations. All seed to have minimum germination rate of 85%.

1. Seed mix for all **general lawn areas** shall conform to the following grass types and percentages:

Improved Perennial Rye	25%
Improved Annual	25%
Creeping Red Fescue	25%
Turf Type Tall Fescue	18.5%
Kentucky Bluegrass 98/85	5%
Red Top	1%
Colonial Bentgrass	0.5%

Sowing Rate: 5 to 7 pounds per 1,000 sq. ft.
Overseed Sowing Rate: 2 to 3 pounds for 1,000 sq. ft.

2.2 WEED CONTROL

A. Pre-emergent weed control for Loam and Seed Areas shall be Treflan 5-G or approved equal. Deliver in manufacturer's fully identified containers and apply according to manufacturer's directions.

2.3 WATER

A. Clean, fresh potable water.

PART 3 - EXECUTION

3.1 GENERAL

A. Seeded areas shall, at a minimum, include all areas of site within project limit lines that have been disturbed or are barren unless otherwise noted on the plans.

3.2 APPLICATION OF SEED

A. The approved seed mixture shall be applied at a rate of 2.5 lbs./1000 square feet by means of seeder device capable of penetrating ground to depth of 1". Seeder machine shall be equipped with disc-type penetrating action and seeder tubes which plant seeds. Seeder shall be similar to Jacobson Model 524-100, 548100 or equal.

B. Distribute seed over area in two separate passes, each one perpendicular to the other (north-south, east-west orientation). Each pass shall be in a linear progression, and shall conform to the field direction that permits the longest straight line application procedure.

C. Hydroseeding will be permitted only with permission of Owner. All requests shall be in writing with detailed and itemized procedure to be followed.

D. Broadcast seeding will be permitted only with permission of Owner. All requests shall be in writing with detailed and itemized procedure to be followed.

3.3 APPLICATION OF FERTILIZER

A. Fertilizer shall be Organic-based and be OMRI (Organic Materials Review Institute) Certified
B. Complete fertilizer in granular form, from commercial sources bearing manufacturer's analysis; 2-3-3 ratio of N-P-K.
   1. Total Nitrogen (N) – 2.0%
      a. 0.8% - Water Soluble Nitrogen
      b. 1.2% - Water Insoluble Nitrogen
   2. Available Phosphate (P2O5) – 3.0%
   3. Soluble Phosphate (K2O) – 3.0%

C. Application Rate: Apply 2-3 pounds per 100 square feet

3.4 MAINTENANCE OF SEEDED AREAS

A. Watering: Contractor shall water all seeded areas within 72 hours of seeding operation. Water non-lawn areas to maintain an adequate supply of moisture within the root zone, an adequate supply of moisture is the equivalent of one inch (1") of absorbed water per week that is delivered at weekly intervals in the form of natural rain or is augmented by periodic watering.

B. Mowing: Lawn areas shall be mowed and trimmed to maintain a height of 3” during the growing seasons from the time of establishment through final acceptance. Clippings shall be legally disposed of. Problem weeds such as thistle and burdock shall be treated and removed.

C. Contractor shall maintain seeded areas in accordance with 1.8 herein.

3.5 ACCEPTANCE OF SEEDING

A. Provisional Acceptance: Provisional acceptance period shall be defined as the elapsed time between application of seed and the establishment of a good, healthy uniform growth of grass.

1. Provisional acceptance will not occur until the seeded areas are well established, exhibiting a vigorous growing condition, devoid of bare spots greater than 1 square foot.
2. It will be the contractor’s responsibility to maintain seeding areas in an approved condition until provisional acceptance.
3. The Contractor shall keep all seeded areas watered and in good condition, reseeding if and when necessary during the provisional acceptance period.
4. Watering of seeded areas.
   a. During this period, water grass to maintain an adequate supply of moisture within the root zone. An adequate supply of moisture is the equivalent of one (1") of absorbed water per week that is delivered at weekly intervals in the form of natural rain or is augmented by periodic watering.
5. It shall be the contractor's responsibility to obtain necessary documentation to show that provisional acceptance has been granted. This shall be done upon written request submitted by the contractor the landscape architect to inspect grass work on site. Provisional acceptance will not be granted until contractor has obtained, in writing, a statement from the landscape architect indicating that grass is satisfactory under the terms of the provisional acceptance.

B. Final Acceptance: Final acceptance period shall be defined as the elapsed time between provisional acceptance and final closeout of the project.

1. All seeded areas shall be guaranteed and maintained by the Contractor for not less than one growing season from the time of provisional acceptance and shall include a minimum of three mowings. Growing season shall be defined as follows:
   a) If provisional acceptance is received during April, May, June or July, next growing season shall end on October 15.
   b) If provisional acceptance is received during September, October, November or December, next growing season shall end on June 1. During this season a minimum of one fertilization and weed control shall be completed by the Contractor.

2. At the end of the guarantee period, inspection will be made by the Owner's Representative upon written request submitted by the Contractor at least ten (10) days before the anticipated date. Grass areas not demonstrating satisfactory stands as outlined above, except if damaged by vandalism, shall be renovated, re-seeded, and maintained meeting all requirements as specified herein.
3. After all necessary corrective work has been completed, the Owner's representative shall certify in writing the final acceptance of the grass area.
4. Decision of Owner as to the necessity to replace grass areas or repair any defects on workmanship, or cause of any destruction or loss, impairment or failure to flourish, shall be conclusive and binding upon Contractor. Replacements shall be the same as specified. All replacements shall be planted as specified herein at Contractor's expense.
5. "Vandalism", as noted above, is intended to mean any acts, whether intentional or accidental, by other persons, which clearly result in damage, and which may reasonably be considered to be beyond the Contractor's reasonable control.

END OF SECTION

SECTION 32 92 40
SEEDING FOR NON-LAWN AREAS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. Provide all materials, equipment, and labor necessary to complete the work as indicated on the drawings or as specified herein.

B. The principal work of this section includes, but may not be limited to the following:
1. Application of seed.
2. Acceptance of seeding.

C. Related Sections
1. Section 32 92 00, Soil Preparation for Lawn Establishment

D. In general, seeded areas shall, at a minimum, include roadsides, yards and setbacks, meadows, marginal wetlands, and all other areas of site within project limit lines that have been disturbed or are barren unless otherwise noted on the plans. Overseeding of established lawn areas, if required on plans, shall also extend to project limit lines, unless otherwise noted.

1.3 RESTRICTIONS:

A. Prior to seeding, contractor shall clearly and plainly mark his limits as indicated on plans.

B. No work shall be performed prior to field determination and approval from Owners' Representative.

1.4 QUALITY ASSURANCE

A. Use a contractor who is fully experienced and qualified in such work.

B. Each seed bag or container shall display a label which identifies the contents as a true representation of the seed mix and percentages required by specification. No seed shall be applied to a site until the Owner or Owner's Representative has determined the mixture meets all requirements.

C. Do not make substitutions without written approval. If specified seed mixes are not available, obtain approval for substitution from the Owner or Owner's Representative.

1.5 SUBMITTALS

A. Certifications and/or labels of proposed seed mixtures stating common and scientific names of grasses, percentages by weight, and percentages of purity and germination.

B. Product information of all proposed weed control chemicals.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect all products from weather or other damaging or deteriorating conditions.

B. Seed mixes which have been damaged or have deteriorated in transit or storage are not acceptable.

C. Seeding Schedule: Prepare a proposed seeding schedule. Schedule dates for each type of landscape work during normal seasons for such work.

Seeding: March 15 - June 30
August 15 - October 15

D. Correlate with specified maintenance periods to provide maintenance to date of acceptance. Once the schedule is accepted, revise dates only as approved in writing after documentation of reasons for delays.

1.7 WARRANTY

A. Warranty seeding until final acceptance of grass stand.

1.8 MAINTENANCE

A. Maintenance of seeding to be performed by the installer includes:
1. Watering;
2. Regrading and replanting eroded areas; and
3. Seeding or patching sparse or bare areas.

B. Maintain seeded areas immediately after placement until grass is accepted.

PART 2 – PRODUCTS

2.1 SEED

A. Any manufacturer's names and/or model numbers identified herein are intended to assist in establishing a general level of quality, configuration, functionality, and appearance required. This is NOT a proprietary specification and it should be noted that "or equivalent" applies to all products denoted herein. It is understood that all manufacturers will have minor variations in configuration, appearance, and product specifications and such minor variations shall not eliminate such manufacturers as an equivalent. It is the intent of this specification to encourage open and competitive involvement from multiple manufacturers that are able to supply similar products.

General: Pure, live, fresh seed from commercial sources, meeting and labeled in accordance with State and Federal laws, rules, and regulations. All seed to have minimum germination rate of 85%

unless otherwise noted.

B. Seed mix for General Lawn Areas shall be the following or approved equal:

Proportion by Type	Weight	Pur.	Germ.
Palmer Perennial Ryegrass	20.0%	99%	90%
Ranger Perennial Ryegrass	20.0%	99%	90%
Baron Kentucky Bluegrass	30.0%	95%	85%
Merion Kentucky Bluegrass	30.0%	95%	85%
Inert Materials 2.5% (maximum)			

Seeded areas shall, at a minimum, include all areas of the site that have been disturbed or are barren unless otherwise noted on the plans. Seed shall be applied at a rate of 7 lbs. per 1000 square feet.

C. Wildflower Seed Mix shall be "Wildflower Seed Mix" as supplied by New England Wetland Plants, Inc. or approved equivalent. Percentages of species shall be per New England Wetland Plants specifications.
Application Rate: 23 lbs/acre | 1900 sq ft/lb

D. Bio-Swale Seed Mix shall be "New England Wet Mix" as supplied by New England Wetland Plants, Inc. or approved equivalent. Percentages of species shall be per New England Wetland Plants specifications.
Application Rate: 1LB/2500sq.ft 18 lbs/acre

D. Sports Seed Mix shall be the following or approved equal:

Proportion by Type	Weight	Pur.	Germ.
Improved Perennial Ryegrass	30.0%	99%	90%
Improved Kentucky Bluegrass CGT	25.0%	99%	90%
Improved Kentucky Bluegrass CBT	25.0%	99%	90%
Chewing Fescue	20.0%	99%	90%

Sowing Rate: 4 to 6 pounds per 1,000 sq.ft.
Overseed Sowing Rate: 2 to 3 pounds for 1,000 sq. ft

2.2 WATER

A. Potable water as required to establish and maintain a healthy stand of grass, see section 3.3A.

PART 3 – EXECUTION

3.1 GENERAL

A. Seeded areas shall, at a minimum, include roadsides, yards and setbacks, meadows, marginal wetlands and all other areas of site within project limit lines that have been disturbed or are barren unless otherwise noted on the plans.

3.2 APPLICATION OF SEED

A. The approved seed mixture shall be applied at a rate specified by each particular type of seeding, by means of hydro-seeding, mechanical spreader or by hand on to bare soil. Seed shall be lightly raked or rolled to ensure soil contact.

B. Distribute seed over area in two separate passes, each one perpendicular to the other (north-south, east-west orientation). Each pass shall be in a linear progression, and shall conform to the field direction that permits the longest straight line application procedure.

C. Hydro seeding will be permitted only with permission of Owner or Owner's Representative. All requests shall be in writing with detailed and itemized procedure to be followed.

D. Broadcast seeding will be permitted only with permission of Owner or Owner's Representative. All requests shall be in writing with detailed and itemized procedure to be followed.

3.3 CARE OF SEEDED AREAS

A. Watering: Contractor shall water all seeded areas within 72 hours of seeding operation. One additional watering may be required and will be at discretion of owner.

B. Mowing.
1. Rain Garden Seed Mix should be mowed twice yearly; Spring and Fall to a min. height of 3".
2. Restoration Seed Mix shall be mowed using a weed-eater to a height of 8" whenever height reaches 18". Trimming lower than 4" will kill many species in the mixes. Problem weeds such as thistle and burdock should be spot treated or hand-pulled each year, including the establishment year.

3.4 ACCEPTANCE OF SEEDING

A. PROVISIONAL ACCEPTANCE
Provisional acceptance period shall be defined as the elapsed time between application of seed and the establishment of a good, healthy, uniform growth of grass.
1. Provisional acceptance will not occur until the seeded areas are well established; exhibiting a vigorous growing condition, devoid of bare spots greater than one (1) square foot.
2. It will be the contractor's responsibility to maintain seeding areas in an approved condition until provisional acceptance.
3. The Contractor shall keep all seeded areas watered and in good condition, reseeding if and when necessary during the provisional acceptance period.
4. Watering of seeded areas:
a) During this period, water grass as necessary to maintain an adequate supply of moisture within the root zone. An adequate supply of moisture is the equivalent of one inch (1") of absorbed water per week that is delivered at weekly intervals in the form of natural rain or is augmented as required by periodic watering.
5. It shall be the contractor's responsibility to obtain necessary documentation to show that provisional acceptance has been granted. This shall be done upon written request submitted by the contractor the landscape architect to inspect grass work on site. Provisional

acceptance will not be granted until contractor has obtained, in writing, a statement from the landscape architect indicating that grass is satisfactory under the terms of the provisional acceptance.

B. FINAL ACCEPTANCE

Final acceptance period shall be defined as the elapsed time between provisional acceptance and final closeout of the project.

1. All seeded areas shall be guaranteed by the Contractor for not less than one growing season from the time of provisional acceptance. Growing season shall be defined as follows:
   a) If provisional acceptance is received during April, May, June or July, next growing season shall end on October 15.
   b) If provisional acceptance is received during September, October, November or December, next growing season shall end on June 1.
2. At the end of the guarantee period, inspection will be made by the Owner upon written request submitted by the Contractor at least ten (10) days before the anticipated date. Grass areas not demonstrating satisfactory stands as outlined above, (except if damaged by vandalism) as determined by the L.A., shall be renovated, re-seeded, and maintained, meeting all requirements as specified herein.
3. After all necessary corrective work has been completed, the Owner's Representative shall certify in writing the final acceptance of the grass area.
4. Decision of Owner as to the necessity to replace grass areas, or repair any defects on workmanship, or cause of any destruction or loss, impairment, or failure to flourish, shall be conclusive and binding upon Contractor. Replacements shall be the same as specified. All replacements shall be planted as specified herein at Contractor's expense.
5. "Vandalism", as noted above, is intended to mean any acts, whether intentional or accidental, by other persons, which clearly result in damage, and which may reasonably be considered to be beyond the Contractor's reasonable control, as determined by the Owner's Representative.

END OF SECTION

SECTION 32 92 50
SOIL PREPARATION FOR RAIN GARDENS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 31 00 00 – Earthwork
2. 32 92 40 – Seeding for Non-Lawn Areas
3. Section 32 93 10 – Trees, Shrubs and Groundcovers

1.2 DESCRIPTION OF WORK

A. Provide all materials, equipment and labor necessary to complete the work as indicated on the drawings, or as specified herein.

B. The principal work of this section includes, but may not be limited to, the following:
1. Mixing of Sand, Loam and Compost
2. Grading and Spreading of Soil Mix

1.3 QUALITY ASSURANCE

A. Contractor shall specialize in work outlined with a minimum of five (5) years of experience on similar projects.

B. Contractor shall not make substitutions without written approval. If specified materials are not available, obtain approval for substitution from the Owner's Representative.

1.4 SUBMITTALS

A. Certified analysis and source of off-site loam to be provided. Certification shall list soil additives to loam including rates and type.

B. Certification and/or labels of proposed soil additives stating names of each.

C. Certified analysis and source of compost to be provided.

D. Certified analysis and source of sand to be provided.

1.1 DEFINITIONS

A. The following definitions shall apply to the work of this section.

The following size distributions of mineral particles by diameter and sieve size shall apply to the following conventional names of soil types:

Conventional Name	Retained on US Sieve No.	Diameter (mm)
Very Coarse Sand	#18	1-2
Coarse Sand	#35	0.5-1
Medium Sand	#60	0.25-0.5
Fine Sand	#140	0.10-0.25
Very Fine Sand	#270	0.05-0.10
Silt	by hydrometer	0.002-0.05
Clay	by hydrometer	Less than 0.002

1.6 PRODUCT DELIVER, STORAGE AND HANDLING

A. Protect all products from weather vandalism or other damaging or deteriorating conditions.

PART 2 - PRODUCTS

2.1 CLEAN SCREENED LOAM

A. Loam shall consist of screened fertile, loose, friable fine sandy loam or sandy loam free of subsoil, refuse, stamps, roots, rocks, cobbles, stones, brush, noxious weeds, litter and other materials which are larger than one inch (1”) in any dimension and which will prevent healthy plant growth.

B. Loam shall be one of the following sandy loams: “coarse sandy loam”, “sandy loam”, “fine sandy loam” based on the USDA Classification System determined by mechanical analysis ASTM D-422. It shall be uniform in composition, without admixture of subsoil. The loam shall possess good filtration and permeability rates, and shall possess a mechanical analysis where:

	Percent Passing By Weight	
Millimeter	Max.	Min.
2	---	100
1	100	80
0.5	87	67
0.25	78	48
0.10	68	30
0.05	55	22
0.02	7	2

1. One hundred percent shall pass a one inch sieve opening, and the maximum retained on the quarter inch sieve shall be 20 percent by weight of the total sample.

2. On-site and off-site loam shall be screened to achieve the above specified sieve analysis.

C. Organic Content and pH: Loam shall contain not less than 6% or more than 10% organic matter determined by wet combustion method on sample dried at 105 degrees C. Acidity range shall be pH 6 to 7 in seeded areas when tested according to methods of testing or A.O.A.C.

1. Loam Borrow shall be pH adjusted for particular planting applications and shall be adjusted prior to delivery to the project site.

a. When pH of loam borrow is equal to or greater than 7 use aluminum sulfate to adjust pH to required levels.

b. When pH of loam borrow is less than 7 use either sulfur or ferrous sulfate to adjust pH to required levels.

D. The loam borrow must not be handled or moved when in wet or frozen conditions.

E. Loam shall be uncontaminated by salt water, foreign matter and substances harmful to plant growth. Topsoil shall not have extractable aluminum greater than 200 parts per million unless otherwise noted. Cation Exchange Capacity (CEC) shall be between 10 and 15.

2.2 COMPOST

A. The Contractor shall notify the Owner or Owner's Representative of the intended source of loam to be employed at least two (2) weeks prior to the intended time of use to allow time for sampling.

B. Shall be made from aged organic materials, free from sticks, stones and/or other substances which would be injurious to health plant growth.

C. The compost shall be screened to remove all materials one inch (1") and larger.

D. Organic matter of compost shall constitute between ten percent (10%) and twenty percent (20%).

2.3 SAND

A. Sand shall be a gravelly sand meeting ASTM D 422.

B.

Sieve size	Percent passing
2"	100%
¾"	70-100%
¼"	50-80%
No. 40	15-40%
No. 200	0-3%

PART 3 - EXECUTION

3.1 MIXING OF LOAM, SAND AND COMPOST

A. Thoroughly mix the Loam, Sand and Compost at the following percentages:
40% Sand
20-30% Loam
30-40% Compost
Percentages are by volume.

B. The Loam/Compost mix shall be fully and thoroughly blended.

3.2 GRADING AND SPREADING OF SOIL MIX

A. Remove all debris and other inorganic materials on any prepared subgrades, and reshape and dress any damaged or eroded slopes, swales, and other areas. Scarify and loosen subgrade to a friable condition in any areas where compaction may have occurred. Loam/Compost shall not be placed until subgrade is in suitable condition and free of excessive moisture or frozen materials. Loam/Compost mix shall be spread to produce a total depth of **18"** or as otherwise shown on the plan. Fill all depressions in existing grades with suitable fill material as specified in Section 31 00 00 prior to spreading of loam/compost mix, then shape and finish grade to depth required.

END OF SECTION

SECTION 32 93 00
SOIL PREPARATION FOR PLANTING BEDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 31 00 00 - Earthwork

1.2 DESCRIPTION OF WORK

A. Provide all materials, equipment and labor necessary to complete the work as indicated on the drawings, or as specified herein.

B. The principal work of this section includes, but may not be limited to, the following:
1. Loam from off-site, if on-site is insufficient
2. Mixing of Loam and Compost.
3. Grading and Spreading of Loam/Compost Mix.
4. Application of Limestone.
5. Application of fertilizer.

1.3 QUALITY ASSURANCE

A. Contractor shall specialize in work outlined with a minimum of five (5) years' experience on similar projects.

B. Do not make substitutions without written approval. If specified materials are not available, obtain approval for substitution from the Owner's Representative.

C. All fertilizer applications shall be performed by a licensed applicator in strict conformance with all local, state and federal regulations. Notify the Owner's Project Representative at least two weeks prior to scheduled application.

1.4 SUBMITTALS

A. At least 30 days to ordering material, the Contractor shall submit to the Architect representative samples, manufacturer's product data, source of off-site loam to be provided, and certified test results for materials as specified below. Certification shall list soil additives to loam including rates and type.

B. Existing On-Site loam: Sample and test existing on-site loam. The Contractor shall sample the existing loam soils from the construction site with the following requirements:

1. The contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard on-site stockpile of existing loam for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes.

2. Preparation of Samples: Contractor shall place these soil slices into a large, clean plastic container and mix thoroughly. Contractor shall take one cup of soil mixture and dry it room temperature (do not dry samples in an oven or on a stove or radiator). Once soil is dry, place soil in sandwich size type plastic bag and close. Label each sample on outside of bag, identifying sample by soil type and acre.

B. Loam from off-site, if on-site is insufficient: The Contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard proposed stockpile of loam borrow for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes.

C. All testing shall be at the expense of the contractor. Contractor shall deliver samples to the testing facility and have the results forwarded to the Architect. Perform all tests for gradation, organic content, soil chemistry and pH. Testing reports shall include the following tests and recommendations:

1. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System.
2. Chemical Analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Lead, Zinc, Soluble Salts, extractable Aluminum, Cadmium, Copper, pH and buffer pH. Except where otherwise noted, nutrient tests shall be for available nutrients.
3. Soil analysis tests shall show recommendations for soil additives to correct soils to meet the specifications and for additives necessary to accomplish lawn and planting work as specified.

D. Compost: Submit supplier's certification of contents.

E. Certification and/or labels of proposed soil additives stating names of each.

1.5 DEFINITIONS

The following definitions shall apply to the work of this section.

The following size distributions of mineral particles by diameter and sieve size shall apply to the following conventional names of soil types:

Conventional Name	Retained on US Sieve No.	Diameter (mm)
Very Coarse Sand	#18	1-2
Coarse Sand	#35	0.5-1
Medium Sand	#60	0.25-0.5

Fine Sand	#140	0.10-0.25
Very Fine Sand	#270	0.05-0.10
Silt	by hydrometer	0.002-0.05
Clay	by hydrometer	Less than 0.002

1.6 PRODUCT DELIVER, STORAGE AND HANDLING

A. Protect all products from weather vandalism or other damaging or deteriorating conditions.

PART 2 - PRODUCTS

2.1 CLEAN SCREENED LOAM

A. Loam shall consist of screened fertile, loose, friable fine sandy loam or sandy loam free of subsoil, refuse, stamps, roots, rocks, cobbles, stones, brush, noxious weeds, litter and other materials which are larger than one inch (1”) in any dimension and which will prevent healthy plant growth.

B. Loam shall be one of the following sandy loams: “coarse sandy loam”, “sandy loam”, “fine sandy loam” based on the USDA Classification System determined by mechanical analysis ASTM D-422. It shall be uniform in composition, without admixture of subsoil. The loam shall possess good filtration and permeability rates, and shall possess a mechanical analysis where:

	Percent Passing By Weight	
Millimeter	Max.	Min.
2	---	100
1	100	80
0.5	87	67
0.25	78	48
0.10	68	30
0.05	55	22
0.02	7	2

1. One hundred percent shall pass a one inch sieve opening, and the maximum retained on the quarter inch sieve shall be 20 percent by weight of the total sample.

2. On-site and off-site loam shall be screened to achieve the above specified sieve analysis.

C. Organic Content and pH: Loam shall contain not less than 6% or more than 10% organic matter determined by wet combustion method on sample dried at 105 degrees C. Acidity range shall be pH 5.5 to 6.5 in planting areas when tested according to methods of testing or A.O.A.C.

1. Loam Borrow shall be pH adjusted for particular planting applications and shall be

adjusted prior to delivery to the project site.

a. When pH of loam borrow is equal to or greater than 7 use aluminum sulfate to adjust pH to required levels.

b. When pH of loam borrow is less than 7 use either sulfur or ferrous sulfate to adjust pH to required levels.

D. The loam borrow must not be handled or moved when in wet or frozen conditions.

E. Loam shall be uncontaminated by salt water, foreign matter and substances harmful to plant growth. Topsoil shall not have extractable aluminum greater than 200 parts per million unless otherwise noted. Cation Exchange Capacity (CEC) shall be between 10 and 15.

2.2 COMPOST

A. Shall be made from aged organic materials, free from sticks, stones and/or other substances which would be injurious to health plant growth.

B. The compost shall be screened to remove all materials one half inch (½") and larger.

2.3 SOIL ADDITIVES

A. Dolomitic Limestone: contain up to 50% magnesium carbonate in a dry, granular form. Limestone shall be ground to such a fineness that at least 50% will pass through a 100-mesh sieve and 90% to 100% will pass through a 20-mesh sieve.

B. Aluminum Sulfate: shall be unadulterated, 57%.

C. Lawn Starter and Maintenance Fertilizer:

1. Fertilizer shall be Organic-based and be OMRI (Organic Materials Review Institute) Certified

2. Complete fertilizer in granular form, from commercial sources bearing manufacturer's analysis; 2-3-3 ratio of N-P-K.

a. Total Nitrogen (N) – 2.0%
b. 0.8% - Water Soluble Nitrogen
c. 1.2% - Water Insoluble Nitrogen
d. Available Phosphate (P2O5) – 3.0%
e. Soluble Phosphate (K2O) – 3.0%

3. Application Rate: Apply 2-3 pounds per 100 square feet

D. Sand: Shall be clean, course, ungraded material meeting ASTM C33 requirements for masonry sand.

E. Humus: Shall be natural humus, free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. The acidity range shall be approximately 5.5 pH to 7.5 pH and the organic matter shall not be less than 85% as determined by loss on ignition. The minimum water absorbing ability shall be 200% by weight on an oven-dry basis.

F. Bone Meal: shall be fine ground, steam cooked, packing house bone with a minimum analysis of 23% phosphoric acid and 4% nitrogen.

G. Gypsum: shall be agricultural grade, granular form. Gradation shall conform to the following:

Sieve Designation	Percent Passing By Weight
No. 8 (2.36mm)	100
No. 16 (1.18mm)	97
No. 30 (0.60mm)	82
No. 50 (0.30mm)	46
No. 100(0.15mm)	21

H. Jute Mesh: Jute mesh shall be uniform, open, plain weave of undyed and unbleached single jute yarn, a minimum of four (4) feet in width plus or minus one (1) inch. There shall be 78 warp ends per width and 41 weft ends per yard. Weight shall average 1.22 pounds per linear yard, plus or minus 5%. Staples for Erosion Control Materials: 9 gauge staples shall be used with jute mesh: 11 gauge with woven paper.

PART 3 - EXECUTION

3.1 MIXING OF LOAM AND COMPOST

A. Thoroughly mix the Loam and Compost at a rate of 50% each if the materials.

B. The Loam/Compost mix shall be fully and thoroughly blended

3.2 GRADING AND SPREADING OF LOAM/COMPOST MIX

A. Remove all debris and other inorganic materials on any prepared subgrades, and reshape and dress any damaged or eroded slopes, swales, and other areas. Scarify and loosen subgrade to a friable condition in any areas where compaction may have occurred. Loam shall not be placed until subgrade is in suitable condition and free of excessive moisture or frozen materials.

B. Scarify and loosen subgrade to a friable condition in any areas where compaction may have occurred.

C. Loam/Compost shall not be placed until subgrade is in suitable condition and free of excessive moisture or frozen materials.

D. Loam/Compost mix shall be spread as required to produce a total depth of 12" as shown on the

plan. Fill all depressions in existing grades with suitable fill material as specified in Section 31 00 00 prior to spreading of loam/compost mix, then shape and finish grade to depth required.

3.3 APPLICATION OF LIMESTONE

A. When applied dry, limestone shall be spread evenly and incorporated thoroughly into the soil by discing or other approved means.

B. When applied hydraulically, no discing will be necessary.

C. Granular treatment to be applied at the rate of 25 to 50 lbs. per 1,000 square feet or as required by soil pH test to produce a pH of 5.5 to 6.5.

END OF SECTION